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# Prospects for a Secondary Market for Farm Mortgages

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Originator

Investor

Broker

Borrower

Farmer Mac

Trustee

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### ABSTRACT

The success of a secondary market for farm mortgages depends on the underwriting standards adopted by the recently created Federal Agricultural Mortgage Corporation (Farmer Mac) and active participation of Farm Credit System (FCS) lenders. Development of underwriting standards and other administrative requirements in both the public and private sectors is likely to delay the initiation of market operations until late 1989. Tight underwriting standards and less than full participation of the FCS could delay active trading for several years after market operations begin. A secondary market is a financial market in which lenders sell mortgages to poolers who, in turn, market securities backed by those mortgages to investors. Loan sales allow lenders to recover most of the loan principal. Borrowers who meet Farmer Mac underwriting standards may therefore be able to get loans even when the supply of loanable funds is otherwise constrained. When loanable funds are more accessible, secondary market sales will increase competition among lenders and lower interest rates. Borrowers who do not meet Farmer Mac standards may either have to rely increasingly on Government credit programs or pay more for credit.

Keywords: Farmer Mac, secondary market, agricultural credit, agricultural policy, Agricultural Credit Act of 1987, farm mortgage markets, agricultural real estate loans, agricultural mortgages

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## ABBREVIATIONS AND TERMS

|             |   |
|-------------|---|
| ABA         | American Bankers Association  |
| ARM         | Adjustable-rate mortgage  |
| CARD        | Certificates of amortizing revolving debt   |
| CAR         | Certificates of automobile receivable   |
| CCC         | Commodity Credit Corporation  |
| CMO         | Collateralized mortgage obligation  |
| ERS         | Economic Research Service, USDA   |
| EPIC        | Equity Programs Investment Corporation  |
| FAMC        | Federal Agricultural Mortgage Corporation   |
| Fannie Mae  | Federal National Mortgage Association   |
| Farmer Mac  | Federal Agricultural Mortgage Corporation   |
| FCS         | Farm Credit System  |
| FDIC        | Federal Deposit Insurance Corporation   |
| FHA         | Federal Housing Administration  |
| FHLB        | Federal Home Loan Bank  |
| FICB        | Federal Intermediate Credit Bank  |
| FLB         | Federal Land Bank   |
| FmHA        | Farmers Home Administration   |
| Freddie Mac | Federal Home Loan Mortgage Corporation  |
| FSLIC       | Federal Savings and Loan Insurance Corporation  |
| Ginnie Mae  | Government National Mortgage Association or<br>a pass-through security issued by the same |
| GSE         | Government-sponsored enterprise   |
| GSLP        | Guaranteed Student Loan Program   |
| HUD         | U.S. Department of Housing and Urban Development  |
| MBB         | Mortgage-backed bond  |
| PCA         | Production Credit Association   |
| REMIC       | Real estate mortgage investment conduit   |
| Sallie Mae  | Student Loan Marketing Association  |
| SEC         | Securities and Exchange Commission  |
| SPI         | Subordinated participation interest   |
| VA          | Veterans' Administration  |

## GLOSSARY

**Conforming (nonconforming) loans:** A conforming loan meets an underwriter's standards (see below). A nonconforming loan does not meet these standards.

**Disintermediation:** A situation arising for a bank or thrift wherein rising interest rates on loans are not matched with rising interest rates on deposits. This could happen for a number of reasons, but is most often discussed with reference to legal ceilings on how high deposit interest rates may go.

**Government-sponsored enterprise (GSE):** A federally chartered credit institution that sponsors a secondary market by issuing bonds or loan-backed securities to purchase loans. Most GSE's have been established in the home mortgage market, but they also serve the markets for student and agricultural loans.

**Mortgage pools:** A collection of mortgages of similar maturity assembled by an investment banker (or other security underwriter) for purposes of issuing securities of equal or lesser value.

**Pass-through security:** A security backed by a pool of assets, usually home mortgages.

**Pooler:** An investment banker (or other security underwriter) who puts together a mortgage pool.

**Primary market:** The market where borrowers purchase loans directly from lenders.

**Regulation Q:** A ceiling on the interest rates that commercial banks (5 percent) and thrifts (5.5 percent) could pay for regular savings accounts that was eliminated by deregulation legislation enacted in 1980 and 1982.

**Secondary market:** A loan resale market in which the lender sells a loan to an investor.

**Subordinated participation interest (SPI):** Substitutes for the 10-percent capital reserve required of originators and/or poolers by the Agricultural Credit Act of 1987 and represents an unguaranteed, residual claim on the stream of borrower payments. The SPI is designed to insure that the originators and/or pooler bears the first 10 percent of loan default costs without requiring advance commitment of capital.

**Underwriting standards:** The minimum quality requirements that an investment banker (or other security underwriter) requires for purchasing mortgages in assembling a pool. Minimum collateral, proof of repayment ability, and proper loan documentation are examples of things that these standards might include.

but is an agency in the U.S. Department of Housing and Urban Development (HUD) (Phaup and Emery). The FCS also is often considered a GSE because it has a Federal charter and issues bonds backed by loans held in portfolio. Farmer Mac, like Ginnie Mae, will guarantee securities through private poolers and will not hold mortgages in portfolio. Farmer Mac securities must also be registered with the Securities and Exchange Commission (SEC) to insure full disclosure of residual liabilities.

This report describes and analyzes the Farmer Mac legislation, the primary market for farm mortgages, and the secondary market for home mortgages to determine how the proposed secondary market for farm mortgages will operate and its likely effect on agricultural credit markets.

## THE AGRICULTURAL CREDIT ACT OF 1987<sup>5</sup>

The Agricultural Credit Act of 1987 (P.L. 100-233), enacted on January 6, 1988, restructures the Federal credit assistance given to farmers. The 1987 Act provides financial assistance to the FCS and funds loan mediation programs at the State level. The 1987 Act also alters the U.S. Department of Agriculture's (USDA) Farmers Home Administration (FmHA) lending programs by authorizing Farmer Mac to create a secondary market for farm mortgages and the Secretary of Agriculture to establish a separate secondary market for FmHA agricultural loan guarantees.

The 1987 Act modeled the Farmer Mac secondary market for farm mortgages after the secondary market for home mortgages. Advocates of the legislation argue that the Farmer Mac secondary market will assist lenders by increasing portfolio liquidity and diversity and by permitting them to earn fee income. This market may also increase borrower access to long-term credit at reasonable interest rates.

Both farm mortgages and some rural housing loans are eligible for sale in the Farmer Mac secondary market, and the same market mechanisms apply to both types of loans. Both types of loans will presumably be mixed in common pools.

### Structure and Administration of the Farmer Mac Secondary Market

The 1987 Act establishes the responsibilities of a number of participants in the Farmer Mac secondary market, including originators, poolers, Farmer Mac, and investors. An additional role, that of pool trustee (or fiscal transfer agent), was assumed, but not cited, in the legislation. The relationships among these participants structure the secondary market for farm mortgages, as shown in figure 1.

#### Originators

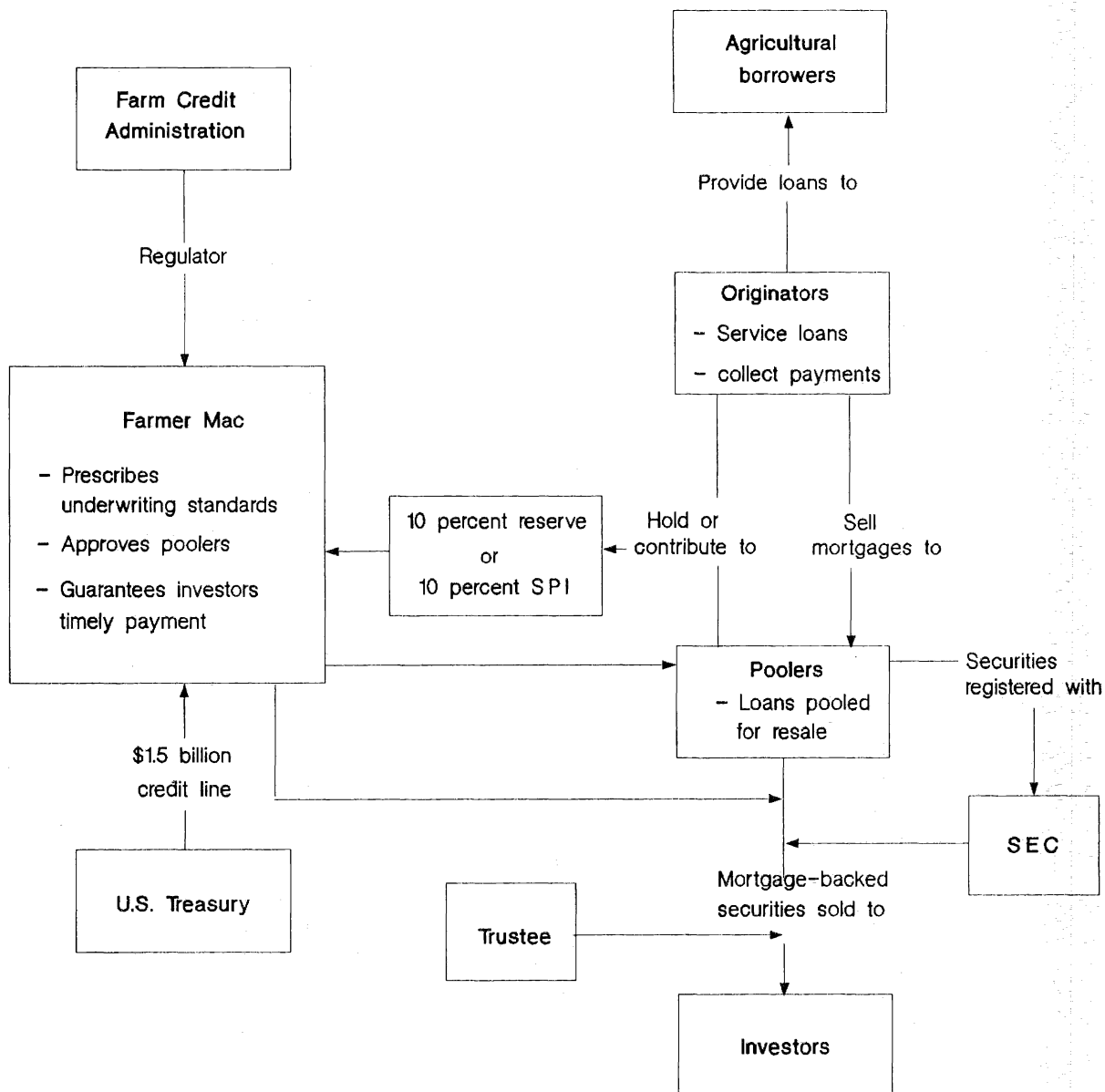
An originator is a lender, such as a commercial bank, life insurance company, FCS institution, or other financial institution, that makes farm mortgage loans. Originators may sell eligible loans to poolers and earn origination and servicing fees.

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<sup>5</sup>The House of Representatives conference report is the primary source for this section (de la Garza). The final version of the 1987 Act contained elements from both H.R. 3030 and S. 1665, but had the greatest resemblance to H.R. 3030.

Figure 1

# Structure of the Farmer Mac secondary market for farm mortgages<sup>1</sup>



SPI = Subordinated participation interest

SEC = Securities and Exchange Commission

<sup>1/</sup> There is no presumption that originators will channel the proceeds of loan sales back into the primary market for farm mortgages. Also, the role of the trustee is unclear.

The 1987 Act specifies the following guidelines for agricultural mortgages sold on the secondary market:

- o Only loans secured by a first lien, fee-simple, or leasehold mortgage on agricultural real estate qualify. Agricultural real estate is land and structures used for agricultural production. These assets must produce a minimum value of agricultural production specified by Farmer Mac.
- o Farm real estate also includes rural housing mortgages. A rural housing loan must be a principal, single-family home located in a rural area. A home's value cannot exceed \$100,000, adjusted annually for inflation, and must be located in a community with fewer than 2,500 inhabitants.
- o Loans must be obligations of a U.S. citizen or resident alien. Loans to any individuals, corporations, and partnerships are eligible, provided that their farming expertise suggests that the loan can be repaid.
- o Loans cannot have loan-to-value ratios (loan principal divided by the appraised value) exceeding 80 percent and cannot exceed \$2.5 million, adjusted annually for inflation, or comprise more than 1,000 acres.<sup>6</sup> The underwriting standards may not discriminate against mortgages with a value of at least \$50,000.
- o Borrowers must have suitable cash-flow to repay the mortgage.
- o The underwriting standards should minimize speculation and land purchase for nonagricultural purposes. Borrowers must certify that the mortgaged real estate will remain in agricultural production.
- o Loan servicing standards should be consistent with standards in other secondary markets.
- o FCS borrowers must waive borrower rights before their loans can be pooled. Loans originated in States with borrower rights laws can be pooled, but poolers may charge a fee to cover associated costs.
- o Loans are exempt from State usury laws that limit interest rates, financing fees, or other charges.

Farmer Mac will set additional loan underwriting, security appraisal, loan servicing, and repayment standards in consultation with loan originators. These standards must be consistent with standards used by private mortgage investors and are subject to prior congressional review.

### Poolers

A pooler is an investment banker, or other security underwriter, who assembles mortgages into a portfolio (or pool) and issues securities collateralized by those mortgage assets. Originators and/or the pooler must establish either a cash reserve or a subordinated participation interest (SPI) equal to 10 percent of the value of the pool principal. The 10-percent requirement can be reduced if the default risk on agricultural loans declines.

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<sup>6</sup>The dollar value limit may be exceeded if required to purchase 1,000 acres.

An SPI has been the source of considerable confusion in interpreting the effect of this legislation. According to the American Bankers Association (ABA), an important supporter of this legislation, the SPI is an unguaranteed, residual claim on the stream of borrower payments. The 1987 Act defines the role, but not the form, of the SPI. The SPI can be held by originators, the pooler, or, if securitized, the public.

**Eligibility.** Poolers must be approved by Farmer Mac, which determines pooler certification standards and enforces underwriting and servicing standards. Any financial institution that meets certification standards and reserve requirements, and is generally able to underwrite securities, can pool loans.

FCS institutions may channel loans through an exclusive pooler. While Farmer Mac is developing certification standards for poolers, the FCS pooler can receive tentative approval to begin operations as an affiliated pooler.

**Pooling Requirements.** The 1987 Act outlines these pooling requirements:

- o Mortgages must vary in principal amount, and no loan value can exceed 3.5 percent of the pool value.
- o The land mortgaged must be geographically dispersed, and pooled land must produce a variety of commodities.
- o A pool must contain at least 50 loans with no two from the same borrower or that borrower's family.

Farmer Mac may develop additional pooling requirements, subject to congressional review.

The 1987 Act limits the total amount of private principal that Farmer Mac can guarantee during the 3 years following enactment. During the first year, this limit is 2 percent of total outstanding agricultural real estate debt, excluding FmHA farm real estate debt. An additional 4 percent and 8 percent can be pooled in the following 2 years. FCS debt is not limited by this restriction.

Pooled mortgages carry a similar maturity, coupon rate, and quality. They are held in trust and may be serviced by the originators for a fee, but are owned by investors. Farmer Mac provides a guarantee to pools assembled by private underwriters and guarantees investors timely payment of interest and principal. The investor's principal is guaranteed against default with the liability shared between the lender/pooler and Farmer Mac.

### **Farmer Mac**

Farmer Mac will be a federally chartered corporation and a FCS institution. Farmer Mac will differ from other FCS institutions in that the FCS and Farmer Mac will not share joint and several liability. Farmer Mac will establish underwriting standards for loans and eligibility standards for originators and poolers. It will guarantee investors timely payments of interest and principal, and guarantee pools against default after the 10-percent reserve is exhausted. Farmer Mac will have no authority to purchase loans or to issue securities but will work through poolers to issue securities.

**Control and Ownership.** The President will appoint a nine-member interim board of directors for the new corporation, representing private lenders, the FCS,

and the public. The board will raise operating capital by selling common stock to FCS institutions, banks, life insurance companies, and other financial institutions wishing to use the corporation and, in general, establish Farmer Mac as an institution. Once \$20 million worth of common stock has been sold, a permanent board of directors will be elected, underwriting standards will be developed, and market operations will begin. The permanent board of directors will consist of 15 members. Commercial banks, insurance companies, and other private financial institutions holding stock will elect five members; FCS institutions holding stock will elect five members; and the President will appoint the remaining five members--including the chair--to represent the general public, including farmers, subject to Senate confirmation.

**Funding.** Farmer Mac can cover operating expenses and build capital reserves by issuing stock, assessing fees, requiring stockholder contributions, and, under certain circumstances, borrowing from the U.S. Treasury. Voting common stock may be issued only to lenders and poolers once an interim board is appointed. These stock issues are to be divided equally into two classes. Class B stock will be issued only to FCS institutions; other purchasers will receive class A stock. No class A stockholder can hold more than 33 percent of outstanding stock. Stockholders may vote only for the five directors representing their own class. The board may also issue nonvoting common and preferred stock. All classes of stockholders will receive any dividends distributed by the corporation. Farmer Mac can also charge fees. It can charge a "guarantee fee" when establishing a pool, annual pool fees, and special administrative fees. No fee can exceed 0.5 percent of the outstanding pool principal and the fee charged must cover expected liabilities. Farmer Mac is thereby expected to accumulate a capital reserve to cover contingent liabilities. If Farmer Mac's capital reserve is depleted, it can assess poolers a "nonrefundable capital contribution" or borrow up to \$1.5 billion from the U.S. Treasury.

**Regulation and Reporting Requirements.** The Farm Credit Administration will regulate Farmer Mac, including auditing, prescribing regulations, and generally supervising Farmer Mac operations to ensure the safety and soundness of financial operations. The Farm Credit Administration will also determine Farmer Mac's reporting requirements and review its annual reports. Poolers of Farmer Mac securities are subject to SEC regulation.

The Office of the Comptroller General (that is, the Government Accounting Office--GAO) may audit Farmer Mac finances as it deems necessary and must investigate the feasibility of establishing a private secondary market for farm mortgages and a separate market for farm and rural business loans. GAO must also evaluate implementation of the 1987 Act and must determine the adequacy of Farmer Mac guarantee fees.

Congress retains the right to review Farmer Mac loan underwriting and appraisal standards for 30 days prior to implementation.

#### **Trustee or Fiscal Transfer Agent**

The 1987 Act is silent on the prospective role of trustee or fiscal transfer agent. A trustee may receive payments from borrowers and disburse payments to investors in the pool. A trustee may also determine the allocation of losses among interested parties; in this case, the originators, the pooler, and Farmer Mac. Alternatively, a fiscal transfer agent could perform this role for the whole market.

## Investors

Investors provide the secondary market for farm mortgages with loanable funds by purchasing Farmer Mac-guaranteed securities. Originators and poolers are investors by virtue of the reserves they hold, and they ensure, along with Farmer Mac, the soundness of the secondary market. Investors must bear the residual risks that interest rates will change in a manner not controlled by prepayment penalties, trustee reinvestment pools, or the multiclass structure of securities, and that loans will be paid off early while being guaranteed against late payments and default.

## Default Provisions

Default provisions of the Farmer Mac secondary market title include security regulation and GSE privileges, reserve requirements, and credit enhancement in the event of default.

## Security Regulation and GSE Privileges

Farmer Mac-guaranteed securities are not Government agency securities. Farmer Mac-guaranteed securities are subject to the Securities Exchange Act of 1934 and the Investment Company Act of 1940. Farmer Mac guarantees only the timely payment of principal and interest. The securities are issued by private poolers. These securities will state that they are not instruments or obligations of the U.S. Government or any of its agents (such as the FCS) and must be registered with the SEC.

Farmer Mac does, however, enjoy some GSE privileges (table 1). Farmer Mac securities can be used to satisfy the reserve requirements of Federal and State financial regulators, such as the Federal Deposit Insurance Corporation (FDIC), and will meet commercial bank reserve requirements. Eight years following enactment, States may enact laws that override, limit, prohibit, or restrict authority granted under this provision.

## Reserve Requirements

Originators and/or the pooler must establish a 10-percent reserve. This reserve will, presumably, be managed by a trustee, and it can take the form of a cash account or an SPI.

If a cash account is held, 10 percent of the outstanding principal must be set aside as a contingency against loan losses. This account can be invested in securities issued, insured, or guaranteed by an agency or instrumentality of the U.S. Government. Losses are first absorbed by the originator's reserves before pool reserves are tapped. Poolers must keep separate loan loss records for each loan contributed to the pool. Earnings in excess of those required to maintain the account are disbursed to originators at least semiannually.

If an SPI is held, no advance capital is committed to reserves. When losses accrue, SPI holders lose their portion of borrower payments until their 10-percent requirement has been exhausted.

## Credit Enhancement in the Event of Default

In the event of default, losses accrue first to the 10-percent reserve (or the SPI). After the reserve (or the SPI) is tapped, losses accrue to Farmer Mac's

Table 1--Characteristics of the Government-sponsored enterprises

| Attribute  | Federal<br>home loan<br>banks         | Fannie<br>Mae  | Freddie<br>Mac                        | Farm<br>credit<br>banks                              | Sallie<br>Mae  | Farmer Mac   |
|--|---------------------------------------|--|---------------------------------------|--|--|--|
| Stockholders   | Member<br>thrifts                     | Private<br>stock-<br>holders   | FHLB &<br>member<br>thrifts           | Farmers,<br>co-ops,<br>& credit<br>associ-<br>ations | Lenders<br>and<br>investors  | FCS and<br>other<br>lenders  |
| Presidential<br>influence                                  | Appoints<br>all 3<br>board<br>members | Appoints<br>5 out of<br>18 board<br>members<br>plus HUD<br>oversight | Appoints<br>all 3<br>board<br>members | No board<br>appoint-<br>ments <u>2/</u>              | Appoints<br>7 out of<br>21 board<br>members<br>including<br>chairman | Appoints<br>5 out of<br>15 board<br>members<br>including<br>chairman |
| Line of credit<br>with Treasury<br>(\$ billion)            | 4.0                                   | 2.25   | Indirect<br>via FHLB                  | Treasury<br>discretion                               | 1.0  | 1.5  |
| Federal tax on<br>agency income<br><u>1/</u>               | No                                    | Yes  | Yes                                   | No   | Yes  | Yes  |
| State and local<br>taxes on<br>investor<br>income          | No                                    | Yes  | Yes                                   | No   | No   | No   |
| Eligible for<br>Federal Reserve<br>open market<br>purchase | Yes                                   | Yes  | Yes                                   | Yes  | Yes  | NA   |
| Exempt from SEC<br>registration                            | Yes                                   | Yes  | Yes                                   | Yes  | Yes  | No   |

NA - Not available. Newly created GSE.

1/ Interest on the debt of all Government-sponsored enterprises is subject to Federal taxation.

2/ The President does not appoint board members, but he appoints all three directors of the Farm Credit Administration, which regulates the FCS.

Source: Moran, 1986; OMB.

capital reserve. If Farmer Mac's reserve is exhausted, Farmer Mac may issue securities to the U.S. Treasury of up to \$1.5 billion to meet outstanding guarantee obligations. The Treasury is obliged to purchase these securities within 10 days after Farmer Mac certifies that its capital reserve has been exhausted. Farmer Mac is likewise obliged to repurchase these securities at rates and on terms prescribed by the Secretary of the Treasury before dispersing funds. These provisions ensure that investors receive timely payments of interest and principal.

## A Secondary Market for FmHA Loan Guarantees

The 1987 Act gives the Secretary of Agriculture the authority to establish a secondary market for FmHA loan guarantees. The Secretary can administer the market directly or appoint a fiscal transfer agent to organize the market on the Secretary's behalf.

Under the farm ownership program, FmHA provides a guarantee covering 90 percent of the outstanding principal of loans of qualifying farmers in the event of default. Farmers unable to qualify for commercial credit because of a weak financial position can apply for the program. Farmers who qualify apply for credit through private lenders, such as commercial banks, that choose to participate in the program. These loans generally have above-average default rates.

The secondary market for FmHA loans is modeled after a secondary market established for Small Business Administration loans rather than after the Ginnie Mae market, as is Farmer Mac. A separate secondary market for FmHA loan guarantees is being created because FmHA borrowers are unlikely to meet Farmer Mac underwriting standards and because all types of FmHA loan guarantees will be eligible for pooling, not just guarantees on real estate loans. This FmHA secondary market is the subject of another ERS report and is not analyzed in this report.

### THE PRIMARY MARKET FOR FARM MORTGAGES

In this section, supply-demand analysis is used to evaluate claims that a secondary market for farm mortgages will increase credit availability and lower interest rates. This analysis suggests that when limits to the supply of loanable funds exist, a secondary market increases the availability of credit. When few constraints on the supply of loanable funds exist, the secondary market increases lender competition and reduces the cost of financing. These conclusions follow from alternative assumptions about the price responsiveness of lenders in supplying credit, assuming that an active secondary market is established and that the primary market is competitively structured.<sup>7</sup> This analysis focuses on the low-risk borrowers served by the Farmer Mac secondary market.

Both supply and demand factors contributed to the farm financial crisis of the 1980's. To the extent that supply constraints are a factor in future crises, the Farmer Mac secondary market will expand credit availability. In either a normal credit market or a demand-induced financial crisis, Farmer Mac will lower interest rates through increased lender competition. Because the farm financial crisis will likely be over before Farmer Mac secondary market operations begin, Farmer Mac will likely lower interest rates.

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<sup>7</sup>The analysis given in this section suggests a competitive market structure because benefits received by lenders are automatically passed onto borrowers. Because several authors (Lee and Chambers; Hester) have suggested that credit markets may not always be competitively structured, this analysis might logically be extended to include the effects of different market structures on the distribution of secondary market benefits.

## The Supply of Credit

Farm mortgage sales on the secondary market will provide lenders with additional liquidity to make new investments in agricultural loans and other investments. Because lenders can use this liquidity for any purpose, the linkage between secondary market loan sales and the supply of credit in the primary market is an important focus for analysis of borrower benefits. Three types of lending institutions will link the primary and secondary markets: Government lenders, the FCS, and private lenders.

A number of factors may have reduced the supply of agricultural credit in the 1980's. The farm financial crisis has placed stress on both lenders and borrowers. Legislative responses to this stress have included lender forbearance, changes in Federal bankruptcy law, State and Federal credit assistance programs, as well as State programs to protect borrower rights. These responses may have lowered lenders' willingness to make agricultural loans.<sup>8</sup> Interest rate deregulation also has raised the opportunity cost of capital and interest rate volatility, particularly for rural banks.

### The Role of Government Lenders

The Federal Government provides credit to farmers through the Commodity Credit Corporation (CCC) and the FmHA. FmHA credit assistance has traditionally been in the form of direct lending, but the FmHA has recently emphasized its guaranteed loan program, which works through private lenders.<sup>9</sup> In 1987, Federal programs accounted for 11.1 percent (\$9.1 billion) of outstanding farm real estate loans and more than 39 percent (\$26.3 billion) of outstanding nonreal estate loans (tables 2 and 3).

The Government provides revenue, a substitute for credit, to farmers through the nonrecourse loan program of the CCC and through the use of deficiency payments, paid diversion, and the conservation reserve. When program payments are disbursed in advance, they provide farmers with operating funds and reduce the need for short-term credit.

The Food Security Act of 1985 shifted the orientation of the FmHA from direct lending to loan guarantees, consistent with a general policy of reducing Federal involvement in credit markets and the resulting budgetary exposure. The change in FmHA lending policy to focus on the loan guarantee program at the expense of direct lending makes it difficult to follow the level of Federal support for farm credit markets. Efforts to "zero out" the FmHA in budget battles of the early 1980's make it appear that the level of Federal support for targeted credit assistance has declined. The level of financial support through the commodity programs, however, has more than offset the decline in formal credit programs.

Direct lending by the Federal Government has been a significant factor in agricultural credit markets. FmHA direct loans can be made under its regular

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<sup>8</sup>For example, 872 out of 1,132 respondents (77 percent) to the ABA's 1987 Farm Credit Situation Survey said that changes in agricultural credit law (Chapter 12 and Uniform Credit Code changes) had decreased the amount of credit they were willing to lend. An average of 16.3 percent of credit applications were denied because of Chapter 12 concerns alone.

<sup>9</sup>In fiscal year 1985, guaranteed farm programs represented 19.8 percent of FmHA obligations. By 1987, they increased to 50.8 percent (USDA, 1988b; Freshwater).

Table 2--Real estate farm debt outstanding, selected years, 1950-87 1/

| Year              | Federal<br>land<br>banks | Farmers<br>Home<br>Adminis-<br>tration | Life<br>insurance<br>companies | All<br>operating<br>banks | Indivi-<br>duals<br>and<br>others | CCC<br>loans | Total   |
|-------------------|--------------------------|--|--------------------------------|---------------------------|-----------------------------------|--------------|---------|
| <u>\$ Million</u> |                          |  |                                |                           |                                   |              |         |
| 1950              | 841                      | 218                                    | 1,147                          | 836                       | 2,142                             | 18           | 5,202   |
| 1960              | 2,232                    | 636                                    | 2,615                          | 1,399                     | 4,387                             | 48           | 11,317  |
| 1970              | 6,420                    | 2,180                                  | 5,122                          | 3,329                     | 10,308                            | 146          | 27,505  |
| 1975              | 14,533                   | 3,044                                  | 6,198                          | 5,621                     | 15,764                            | 170          | 45,330  |
| 1976              | 16,881                   | 3,311                                  | 6,828                          | 6,075                     | 17,258                            | 144          | 50,497  |
| 1977              | 19,640                   | 3,613                                  | 8,150                          | 6,994                     | 19,556                            | 492          | 58,445  |
| 1978              | 22,686                   | 3,746                                  | 9,698                          | 7,717                     | 21,712                            | 1,148        | 66,707  |
| 1979              | 27,322                   | 6,254                                  | 11,278                         | 7,798                     | 25,660                            | 1,391        | 79,703  |
| 1980              | 33,208                   | 7,431                                  | 11,991                         | 7,760                     | 27,801                            | 1,456        | 89,647  |
| 1981              | 40,254                   | 8,086                                  | 12,136                         | 7,573                     | 29,291                            | 1,342        | 98,682  |
| 1982              | 43,966                   | 8,361                                  | 11,898                         | 7,626                     | 29,527                            | 1,127        | 102,505 |
| 1983              | 45,026                   | 8,718                                  | 11,834                         | 8,494                     | 29,847                            | 888          | 104,807 |
| 1984              | 45,321                   | 9,206                                  | 11,592                         | 9,313                     | 27,636                            | 623          | 103,691 |
| 1985              | 41,204                   | 9,540                                  | 11,035                         | 10,443                    | 25,160                            | 307          | 97,689  |
| 1986              | 34,773                   | 9,482                                  | 10,199                         | 11,338                    | 22,218                            | 123          | 88,133  |
| 1987 2/           | 30,800                   | 9,073                                  | 9,478                          | 13,025                    | 20,073                            | 60           | 82,509  |
| <u>Percent</u>    |                          |  |                                |                           |                                   |              |         |
| 1950              | 16.2                     | 4.2                                    | 22.1                           | 16.1                      | 41.2                              | 0.3          | 100.0   |
| 1960              | 19.7                     | 5.6                                    | 23.1                           | 12.4                      | 38.8                              | .4           | 100.0   |
| 1970              | 23.3                     | 7.9                                    | 18.6                           | 12.1                      | 37.5                              | .5           | 100.0   |
| 1975              | 32.1                     | 6.7                                    | 13.7                           | 12.4                      | 34.8                              | .4           | 100.0   |
| 1976              | 33.4                     | 6.6                                    | 13.5                           | 12.0                      | 34.2                              | .3           | 100.0   |
| 1977              | 33.6                     | 6.2                                    | 13.9                           | 12.0                      | 33.5                              | .8           | 100.0   |
| 1978              | 34.0                     | 5.6                                    | 14.5                           | 11.6                      | 32.5                              | 1.7          | 100.0   |
| 1979              | 34.3                     | 7.8                                    | 14.2                           | 9.8                       | 32.2                              | 1.7          | 100.0   |
| 1980              | 37.0                     | 8.3                                    | 13.4                           | 8.7                       | 31.0                              | 1.6          | 100.0   |
| 1981              | 40.8                     | 8.2                                    | 12.3                           | 7.7                       | 29.7                              | 1.4          | 100.0   |
| 1982              | 42.9                     | 8.2                                    | 11.6                           | 7.4                       | 28.8                              | 1.1          | 100.0   |
| 1983              | 43.0                     | 8.3                                    | 11.3                           | 8.1                       | 28.5                              | .8           | 100.0   |
| 1984              | 43.7                     | 8.9                                    | 11.2                           | 9.0                       | 26.7                              | .6           | 100.0   |
| 1985              | 42.2                     | 9.8                                    | 11.3                           | 10.7                      | 25.8                              | .3           | 100.0   |
| 1986              | 39.5                     | 10.8                                   | 11.6                           | 12.9                      | 25.2                              | .1           | 100.0   |
| 1987 2/           | 37.3                     | 11.0                                   | 11.5                           | 15.8                      | 24.3                              | .1           | 100.0   |

1/ Excluding operator household debt. As of December 31 of each year.

2/ Preliminary.

Source: USDA, 1988a.

Table 3--Nonreal estate farm debt outstanding, selected years,  
1950-87 1/

| Year              | All<br>operating<br>banks | Produc-<br>tion<br>credit<br>associ-<br>ations | Federal<br>inter-<br>mediate<br>credit<br>banks | Farmers<br>Home<br>Adminis-<br>tration | Indivi-<br>duals<br>and<br>others | CCC<br>crop<br>loans | Total   |
|-------------------|---------------------------|--|---|--|-----------------------------------|----------------------|---------|
| <u>\$ Million</u> |                           |  |   |  |                                   |                      |         |
| 1950              | 2,385                     | 433  | 62  | 290                                    | 2,512                             | 794                  | 6,476   |
| 1960              | 4,717                     | 1,421  | 88  | 369                                    | 4,541                             | 1,342                | 12,478  |
| 1970              | 10,491                    | 5,084  | 220   | 700                                    | 4,753                             | 1,730                | 22,978  |
| 1975              | 19,051                    | 10,339   | 350   | 1,560                                  | 8,382                             | 232                  | 39,914  |
| 1976              | 22,002                    | 11,759   | 368   | 1,652                                  | 9,789                             | 936                  | 46,506  |
| 1977              | 24,295                    | 12,978   | 376   | 2,764                                  | 11,999                            | 4,146                | 56,558  |
| 1978              | 26,718                    | 14,369   | 511   | 5,086                                  | 14,011                            | 4,646                | 65,341  |
| 1979              | 29,327                    | 17,388   | 666   | 8,188                                  | 16,278                            | 3,714                | 75,561  |
| 1980              | 29,986                    | 18,939   | 811   | 10,029                                 | 17,367                            | 3,525                | 80,657  |
| 1981              | 31,215                    | 20,355   | 914   | 12,706                                 | 18,404                            | 6,666                | 90,260  |
| 1982              | 34,322                    | 19,686   | 872   | 12,977                                 | 19,139                            | 14,525               | 101,521 |
| 1983              | 37,075                    | 18,542   | 850   | 12,855                                 | 18,566                            | 9,911                | 97,799  |
| 1984              | 37,619                    | 17,211   | 875   | 13,740                                 | 17,640                            | 8,319                | 95,404  |
| 1985              | 33,738                    | 13,465   | 537   | 14,714                                 | 15,070                            | 17,029               | 94,553  |
| 1986              | 29,678                    | 10,306   | 275   | 14,425                                 | 12,143                            | 18,682               | 85,509  |
| 1987 <u>2/</u>    | 25,445                    | 8,891  | 237   | 13,314                                 | 10,319                            | 13,000               | 71,206  |
| <u>Percent</u>    |                           |  |   |  |                                   |                      |         |
| 1950              | 36.8                      | 6.7  | 1.0   | 4.5                                    | 38.8                              | 12.3                 | 100.0   |
| 1960              | 37.8                      | 11.4   | .7  | 3.0                                    | 36.4                              | 10.8                 | 100.0   |
| 1970              | 45.7                      | 22.1   | 1.0   | 3.0                                    | 20.7                              | 7.5                  | 100.0   |
| 1975              | 47.7                      | 25.9   | .9  | 3.9                                    | 21.0                              | .6                   | 100.0   |
| 1976              | 47.3                      | 25.3   | .8  | 3.6                                    | 21.0                              | 2.0                  | 100.0   |
| 1977              | 43.0                      | 22.9   | .7  | 4.9                                    | 21.2                              | 7.3                  | 100.0   |
| 1978              | 40.9                      | 22.0   | .8  | 7.8                                    | 21.4                              | 7.1                  | 100.0   |
| 1979              | 38.8                      | 23.0   | .9  | 10.8                                   | 21.5                              | 4.9                  | 100.0   |
| 1980              | 37.2                      | 23.5   | 1.0   | 12.4                                   | 21.5                              | 4.4                  | 100.0   |
| 1981              | 34.6                      | 22.6   | 1.0   | 14.1                                   | 20.4                              | 7.4                  | 100.0   |
| 1982              | 33.8                      | 19.4   | .9  | 12.8                                   | 18.9                              | 14.3                 | 100.0   |
| 1983              | 37.9                      | 19.0   | .9  | 13.1                                   | 19.0                              | 10.1                 | 100.0   |
| 1984              | 39.4                      | 18.0   | .9  | 14.4                                   | 18.5                              | 8.7                  | 100.0   |
| 1985              | 35.7                      | 14.2   | .6  | 15.6                                   | 15.9                              | 18.0                 | 100.0   |
| 1986              | 34.7                      | 12.1   | .3  | 16.9                                   | 14.2                              | 21.8                 | 100.0   |
| 1987 <u>2/</u>    | 35.7                      | 12.5   | .3  | 18.7                                   | 14.5                              | 18.3                 | 100.0   |

1/ Excluding operator household debt. As of December 31 of each year.

2/ Preliminary.

Source: USDA, 1988a.

program or under its subsidized program, which provides credit at roughly half the commercial rate (fig. 2 shows regular rates). The FmHA provides credit to high-risk farmers unable to borrow from private lenders and, as such, FmHA loans will seldom qualify for sale in the Farmer Mac secondary market.

### The Role of the Farm Credit System

The FCS is a system of cooperative lending institutions, including the Federal land banks (FLB's) and Bank for Cooperatives. Production credit associations (PCA's), FLB associations, and Federal intermediate credit banks (FICB's) make loans at the local level to provide commercial credit to farmers and their cooperatives at competitive rates. The FLB's accounted for more than 37 percent of the farm real estate market in 1987 (table 2) and dominate the farm mortgage market (Freshwater and Sullivan).

The FCS is considered a commercial lender. Average-cost pricing in the late 1970's and early 1980's, however, made the FCS competitive with even the FmHA (fig. 3).

### The Role of Private Lenders

Private lenders have extended the majority of loans to agriculture, accounting for 51.6 percent of outstanding farm real estate loans and 61.4 percent of outstanding farm nonreal estate loans in 1987. Individuals and others led the non-FCS, private farm real estate lenders in 1987, followed by commercial banks and life insurance companies. Banks and individuals and others supplied the largest share of nonreal estate loans (tables 2 and 3).

Over time, there has been little change in the private market for nonreal estate loans. The role of private lenders in the market for real estate loans eroded, by contrast, throughout the post-World War II period with the rise of FLB lending. The share held by life insurance companies, for example, declined from 22 percent (\$1.1 billion) in 1950 to 11.5 percent in 1987 (\$9.5 billion) (table 3).<sup>10</sup>

Constraints on the supply of loanable funds and regulatory constraints (except for individuals and others) distinguish private lenders from the FCS in the farm mortgage market. Commercial banks, for example, rely chiefly on deposits as a source of loanable funds, while the FCS raises funds by issuing bonds in the capital market as the need arises. Regulators discourage commercial banks from advancing more than a small number of long-term loans because of their reliance on deposits for loanable funds. The opportunity cost of funds has also grown in importance for insurance companies as small savers have gained access to pension funds, individual retirement accounts, and mutual funds that have increased yield competitiveness. Consequently, private lenders normally follow the price leadership of the FCS in the farm mortgage market.

### The Farm Financial Crisis

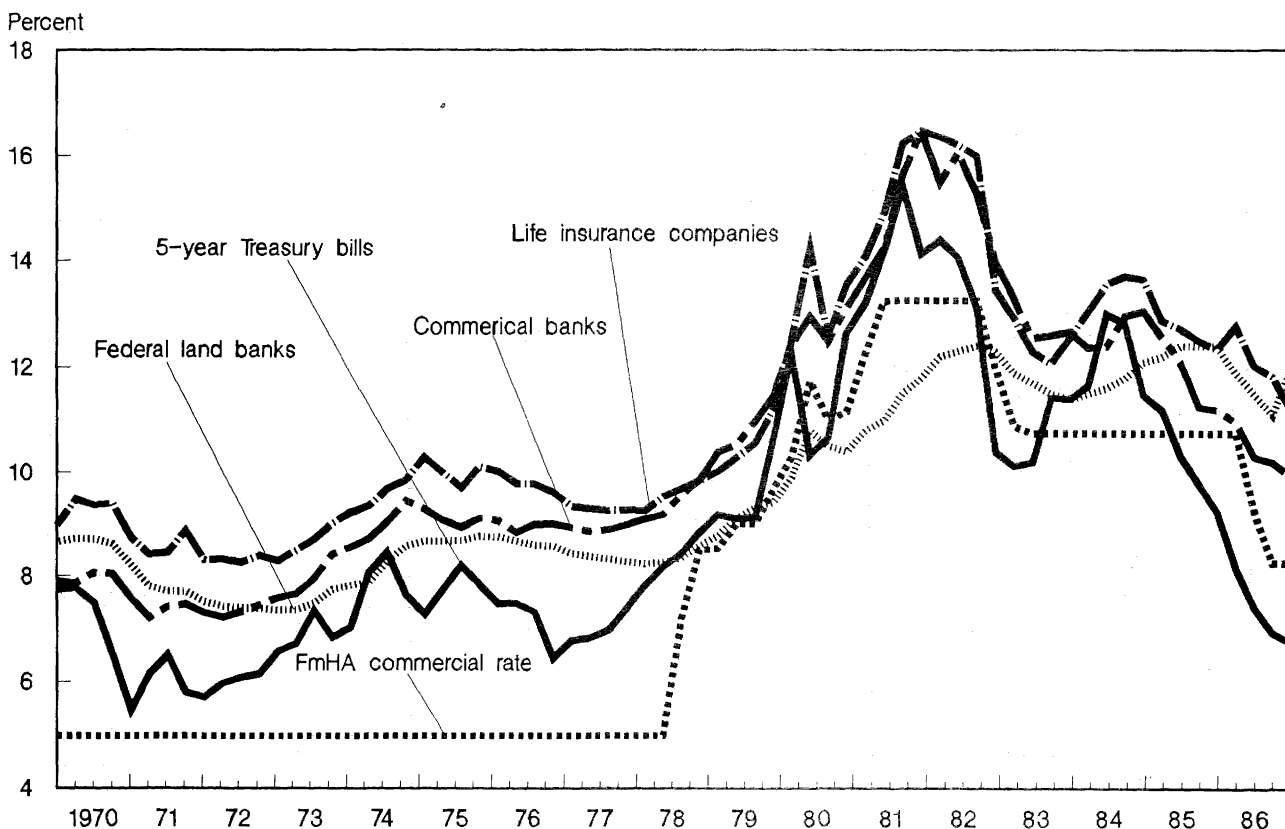
The farm financial crisis of the 1980's arose because of a number of factors, including a restrictive monetary policy that led to a rise in exchange and

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<sup>10</sup>The value of life insurance company investments in farm mortgages remains stable through time because of their policy of balancing long-term policy liabilities with long-term mortgage assets. The market share of life insurance companies accordingly rises and falls with changes in total outstanding farm mortgage debt.

Figure 2

# Interest rates on agricultural real estate loans, by type of financing, quarterly, 1970-86



real interest rates, a decline in demand for agricultural products stemming from reduced export demand, and a failure of agricultural policy to anticipate events. Figures 2 and 4 depict the changes in nominal and real agricultural mortgage interest rates between 1970 and 1986.

A change in Federal Reserve policy in October 1979 led first to a rapid rise in interest rates and then to higher exchange rates. The primary effects of this change were to lower inflation and to induce a recession in the general economy. There were also important sectoral effects affecting agriculture. First, higher interest rates increased the cost of servicing outstanding variable interest debt in the farm sector and left less income to support new debt requests. Second, the rise in real interest rates contributed to a rapid rise in exchange rates, and to a rapid and significant decline in agricultural exports because of the structure of agricultural price support policies.<sup>11</sup> Third, the speculative demand for land declined with the rise in real interest

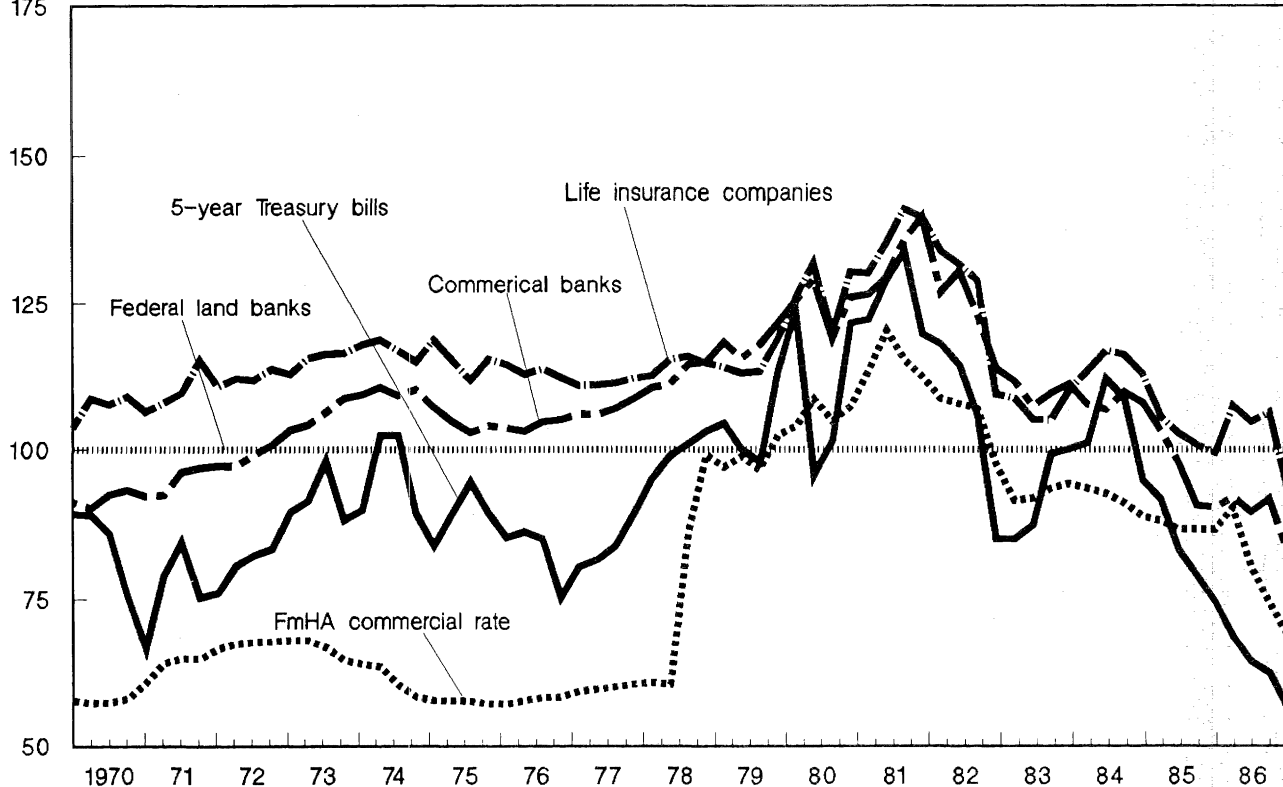
<sup>11</sup>The Food Security Act of 1981 assumed that commodity exports would continue to grow. Consequently, it was designed to reduce reliance on target prices in favor of higher loan rates and, in general, to increase reliance on export promotion programs. This led to a decline in exports when the U.S. dollar more than doubled in value because the loan rate placed an effective floor on the world market price. Whenever the world price fell to the loan rate, U.S. producers produced for the CCC and left the world market to competing producers, who found the loan rate exceedingly high when converted into their domestic currencies (Longmire and Morey). This situation persisted until the passage of new farm legislation in 1985.

Figure 3

# Relative interest rates on agricultural real estate loans, by type of financing, quarterly, 1970-86

Percent of FLB

175



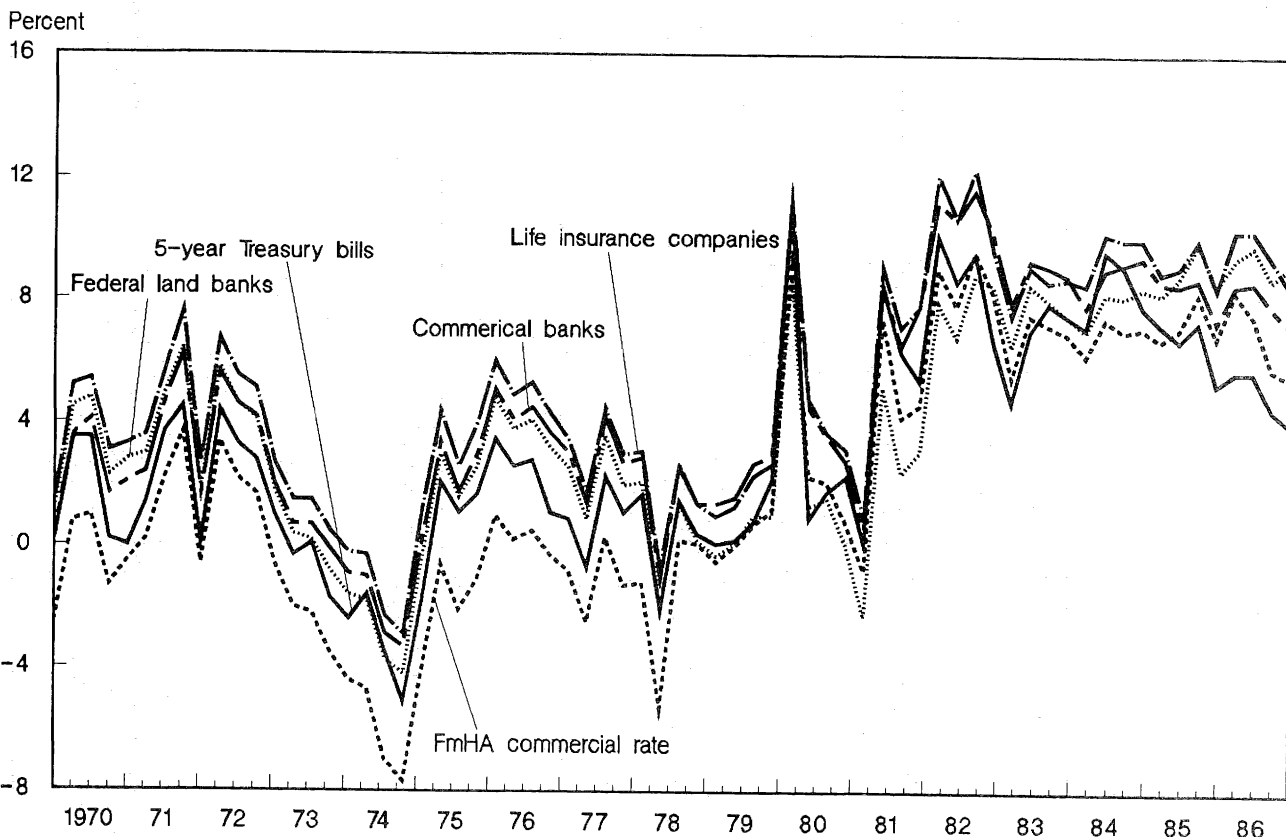
rates. Fourth, the high cost of financing and lower demand for agricultural products caused the real return on farm assets to turn negative in 1981 and remain negative until 1987. The value of U.S. farm assets declined from \$1,005 billion in 1981 to \$691 billion in 1987 (USDA, 1988a).

**Effect on the FCS and Other Lenders.** The decline in asset values weakened the ability of farmers to refinance loans, and lower farm incomes contributed to increased loan delinquencies and farm foreclosures. Lenders accumulated more than 8 million acres of farmland through foreclosures and suffered record losses. Commercial bank loan losses, for example, totaled \$4 billion between 1984 and 1987 and contributed to the failure of 259 agricultural banks.

The farm financial crisis also affected the FCS. The FCS adopted average cost pricing in the early 1970's that made it highly competitive in both the high- and low-risk borrower markets (fig. 3). This led to a rapid rise in FCS originations that, after financial stress became evident in the sector, led to record delinquencies and loan losses. FCS pricing became much less competitive after 1982 as it attempted to recover loan losses, and the number of FCS originations plummeted. Changes in FCS price competitiveness reflect the lag in adjusting to market conditions created by average cost pricing.

In 1983 the FCS had outstanding loans of \$81.8 billion and capital reserves of \$11.7 billion, including almost \$6 billion in surplus (accumulated retained

Figure 4  
**Real interest rates on agricultural real estate loans, by type of financing, quarterly, 1970-86**



earnings). By the end of 1987, loan volume had declined to \$52 billion and capital to \$5 billion, leaving only \$1.3 billion of surplus. To date, these figures show the largest loan losses of any farm lender. The weakened financial condition of FCS institutions led to legislative amendments that require merger of FICB's and FLB's and encourage the PCA's to consolidate.

Although the Federal Government provided legislative assistance to the FCS in the Farm Credit Amendment Acts of 1985 and 1986, and will provide additional assistance through the 1987 Act, the long-term future of the FCS has remained uncertain. Loan losses suffered in the early 1980's substantially reduced the FCS's capital reserve and motivated attempts to recover losses by raising interest charges. Likewise, the spread between FCS bonds and Treasury bonds of comparable maturity has risen above historical norms and the per-unit cost of offering loan services has risen with the decline in originations. Rising financing and administrative costs have accordingly put upward pressure on FCS interest charges and lessened the competitiveness of FCS loans relative to other lenders (fig. 3).

This weakening of FCS competitiveness, along with more rigorous lending standards, may motivate good customers to seek loans from other lenders. The consolidation of FCS institutions is expected to achieve some cost savings in the near future and most high coupon debt will be paid down by 1994. The costs of establishing an insurance fund and holding additional reserves will, however, be at least partially offset. The future of the FCS accordingly remains uncertain.

Effect on Borrowers. The farm financial crisis has affected most farm lenders and many borrowers. Farm mortgage originations declined from \$12.9 billion in 1980 to \$4.7 billion in 1986 (table 4). Recent observers have attributed this decline to a lack of borrower demand, citing declines in farm income and increased borrower risk aversion prompted by falling land values, low returns on investments, and foreclosures.

Several observations have made it difficult to attribute the decline in mortgage originations entirely to a decline in borrower demand. First, much of the decline in borrower interest in mortgage origination can be attributed to a change in the opportunity cost of capital. The biggest change to occur in 1978 was a reversal in Federal Reserve policy that slowed the growth rate in the money supply. Nominal interest rates rose rapidly and obtained record heights that had little effect on mortgage demand until inflation abated and real interest rates went from negative to high and positive (figs. 2 and 4). This change in the opportunity cost of capital was a supply, not a demand, effect and it was both dramatic and swift. Second, while the demand for mortgage credit may have declined because of declining farm income, the prevalence of adjustable rate mortgages (ARM) ties at least part of the decline in farm income to rising interest costs on outstanding debt. Inasmuch as demand declined because of rising interest costs, declining demand is more a result of the financial stress than its cause. Third, if Congress viewed the farm credit crisis as primarily a demand problem, then why did Congress respond by providing the FCS with additional liquidity and creating a secondary market to increase the supply of loanable funds? In view of these considerations, we can assume that supply factors are at least as important as demand factors in the evolution of the farm financial crisis of the 1980's.

### Deregulation and Financial Innovation

The move to deregulate financial markets began in the late 1970's as a response to rising interest rates. Between 1978 and 1981, short-term interest rates, as measured by the rate on 3-month U.S. Treasury bills, rose from below 7 percent to above 15 percent. This change created a liquidity crisis for depository institutions subject to the interest rate ceilings that Regulation Q imposed on deposit savings accounts. Increased interest-rate volatility in the national capital market also led to losses on long-term, fixed-interest-rate loans. This volatility encouraged greater use of ARM's and probably accounts for the greater interest rate volatility seen in agricultural mortgage rates.<sup>12</sup>

Interest rate deregulation and financial innovation have also affected the delivery of agricultural credit. Before the 1970's, depositors in rural areas and local banks had few convenient investment alternatives and their savings generally remained in the local community. Notwithstanding, local banks could transfer funds to urban areas through sales of Federal funds, intrabranh transfers in States that permit branch banking, and correspondent relationships with urban banks. Federally chartered thrifts, by contrast, were first permitted to make agricultural loans in 1982, and agricultural

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<sup>12</sup>Roth (1988) argued that deregulation and establishment of a secondary market have increased the coefficient of variation between home mortgage interest rates and 10-year Treasury bonds from almost nonexistent before 1981 to more than 90 percent in 1987.

Table 4--Farm mortgage originations, by lender, 1970-87

| Year              | Federal<br>land<br>banks | Farmers<br>Home<br>Adminis-<br>tration | Life<br>insurance | All<br>operating<br>banks <u>1/</u> | Total  |
|-------------------|--------------------------|--|-------------------|-------------------------------------|--------|
| <u>\$ Million</u> |                          |  |                   |                                     |        |
| 1970              | 1,060                    | 262                                    | 314               | 213                                 | 1,849  |
| 1971              | 1,550                    | 268                                    | 503               | 402                                 | 2,723  |
| 1972              | 2,510                    | 356                                    | 700               | 515                                 | 4,081  |
| 1973              | 3,285                    | 408                                    | 1,005             | 598                                 | 5,296  |
| 1974              | 4,243                    | 352                                    | 1,005             | 468                                 | 6,068  |
| 1975              | 4,411                    | 352                                    | 1,510             | 309                                 | 6,582  |
| 1976              | 4,701                    | 435                                    | 1,510             | 454                                 | 7,100  |
| 1977              | 5,736                    | 451                                    | 2,373             | 919                                 | 9,479  |
| 1978              | 6,355                    | 551                                    | 2,748             | 723                                 | 10,377 |
| 1979              | 9,119                    | 768                                    | 2,806             | 81                                  | 12,774 |
| 1980              | 10,282                   | 954                                    | 1,654             | -38                                 | 12,852 |
| 1981              | 12,203                   | 813                                    | 1,108             | -187                                | 13,937 |
| 1982              | 8,512                    | 662                                    | 695               | 53                                  | 9,922  |
| 1983              | 4,785                    | 750                                    | 1,109             | 868                                 | 7,512  |
| 1984              | 4,280                    | 701                                    | 1,003             | 819                                 | 6,803  |
| 1985              | 1,445                    | 721                                    | 1,070             | 1,130                               | 4,366  |
| 1986              | 1,660                    | 563                                    | 1,219             | 1,232                               | 4,674  |
| 1987              | 2,555                    | 399                                    | NA                | NA                                  | NA     |

NA = Not available.

1/ Change in total outstanding farm real estate debt (excluding farm households).

Sources: USDA, 1988b; OMB; Farm Credit Administration; American Council of Life Insurance; Melichar.

loans still may not exceed 20 percent of their portfolios. Investment opportunities available in financial centers such as New York were less accessible to small investors, particularly those in rural areas. This insulated rural commercial banks and thrifts from events in the national capital markets and gave them a stable base of low-cost deposit funds. These low-cost funds often translated into low-cost loans, including low-cost agricultural loans.

The development of new financial instruments, such as money market mutual funds, which paid market-based interest rates and were available to the small investor, spread rapidly during the 1970's and offered an alternative to savings accounts. Partly as a response to competition from these alternatives, deregulation in the 1980's focused on elimination of interest rate ceilings on deposit accounts. Urban and rural financial institutions responded with new savings instruments, such as money market accounts and mutual funds. This response led to a greater integration of rural and urban financial markets and a greater competition for each dollar saved. Private rural lenders can no longer offer low interest rates to depositors and expect

to retain their business. The consolidation of small rural banks suffering from financial stress into larger institutions also has increased the integration of rural and urban credit markets.

### Analytical Implications

Several points should be considered when analyzing the supply of mortgages, including the price leadership of the FCS and the structure of the farm mortgage market, changing market conditions, and the opportunity cost of capital. This analysis suggests that under tight credit market conditions, a secondary mortgage market may modestly lower interest rates and may increase the quantity of credit purchased. The stringent conditions required by a tight credit market may not, however, adequately describe the farm mortgage market, even during crisis periods such as the early 1980's, because the FCS has enjoyed free access to the national capital market. Changes in bond prices are more likely to lower interest rates and otherwise improve conditions in the farm mortgage market than are changes accompanying a secondary market.

Structure of the Farm Mortgage Market. The commercial market for farm mortgages is characterized by two components: the FCS and other commercial lenders. The FCS can enter the bond market to acquire loanable funds while other commercial lenders cannot. Access to national capital markets enables the FCS to place a ceiling on the interest rates available to its customers. This ceiling is almost equal to the opportunity cost of capital (cost of bonds) plus administrative costs and the other costs imposed by credit risks.

Other commercial lenders must either match the FCS interest rate or serve market areas (or borrowers) not served by the FCS. Because regulators require that other commercial lenders maintain a diversified portfolio and because these lenders lack the access to the bond market afforded the FCS, other commercial lenders have a cost structure that differs from the FCS. These cost differences suggest that other commercial lenders face rising unit costs as they extend more farm mortgage loans.

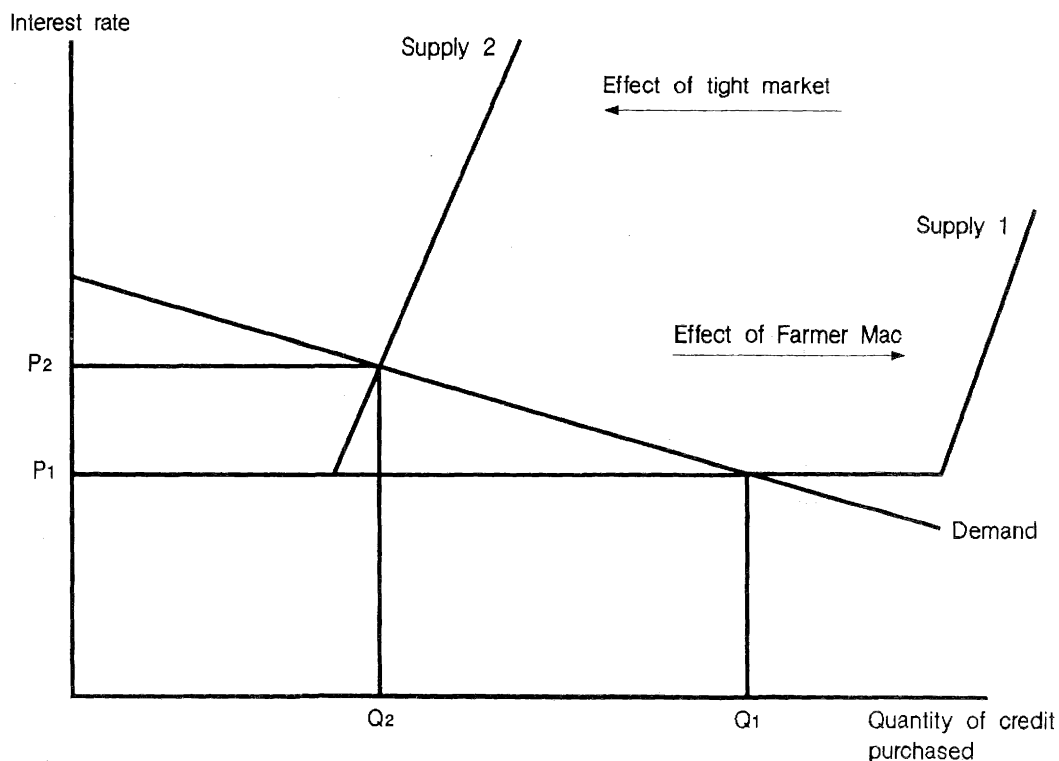
The supply curve for farm mortgage credit depicts the quantity of farm mortgages that lenders are willing to sell as interest rates vary. The structure of the farm mortgage market suggests that the supply curve for farm mortgage credit is segmented. The first segment of the curve is flat, reflecting the cost-plus pricing scheme employed by the FCS and unlimited access to the bond market. The second segment of the curve slopes upward, reflecting the rising costs faced by other commercial lenders. Figure 5 depicts this supply curve.

Changing Market Conditions. Creating a secondary market shifts the supply curve for farm mortgage credit to the right. Because market conditions also may shift the supply curve, it is useful to know how the secondary market will affect interest rates and the quantity of credit purchased under tight (supply curve shifts to the left) and normal (no shift) credit market conditions. Easy (supply curve shifts to the right) credit market conditions are similar to the changes accompanying the secondary market.

Assume that the market structure outlined in the previous section exists and has an elastic demand curve. Under normal credit market conditions, this demand curve intersects the supply curve on the elastic segment of the supply curve. The secondary market accordingly causes little or no change in interest rates and no change in the quantity of credit purchased as the supply

Figure 5

**The supply of farm mortgage credit under easy (Supply 1) and tight (Supply 2) credit market conditions**



curve shifts to the right. What little change that could occur in interest rates results from increased lender competition, and is bounded in the long run by the FCS' costs of bond financing and Farmer Mac's costs of security financing. Consequently, interest rates could decline in a normal market by no more than the FCS profit margin, which has been negative in recent years because of average-cost pricing in a market with falling interest rates.

In a tight credit market, the supply curve shifts to the left far enough that the demand curve intersects the supply curve on the upward sloping segment. This implies that the FCS is somehow constrained from increased lending and that new loans are financed by other commercial lenders who face rising costs. Under these conditions, the secondary market shifts the supply curve to the right so that the demand curve intersects the supply curve on the flat segment of the curve. The quantity of credit purchased therefore increases and interest rates decline.

This analysis indicates that the secondary market will affect the terms and quantity of credit allocated to borrowers only under fairly restrictive conditions--the tight market case. It is not clear that even the farm financial crisis of the 1980's has met these conditions. Consequently, it appears as though the primary effect of the secondary market for farm mortgages will be to increase the competition among lenders with only a minor effect on interest rates.

Gabriel and Prentice assumed the opposite extreme: a fixed demand and an abundant supply of farm mortgage credit. Under these circumstances, the secondary market increases the competition among lenders and has no effect on the quantity of credit supplied. Their study reported a decline of 50-100 basis points in the cost of securitized originations and a 17-basis-point decline in the cost of all outstanding farm mortgage debt.

The Opportunity Cost of Capital. The chief problem in the farm mortgage market of the 1980's has been the enormous increase in the opportunity cost of capital to lenders. Real interest rates in the bond market have risen and have remained high since the late 1970's. These rates have also been highly volatile. In figure 5, changes in the opportunity cost of capital are illustrated by raising and lowering the supply curve to reflect the cost-plus pricing rules employed by the FCS. Comparing increases or decreases in the opportunity cost of capital with potential interest rate changes due to the establishment of a secondary market for farm mortgages makes it clear that bond prices are more important than competitive changes in the farm mortgage market in determining the interest rates paid by farm borrowers.

### The Demand for Credit

The demand for credit originates when a farmer determines that the expected return from asset ownership meets or exceeds the cost of financing, and yields a return greater than alternative opportunities. The demand for financing can be derived from the demand for investment goods used in agricultural production (which, in turn, is derived from the demand for farm products), or the demand for assets used to store value.<sup>13</sup>

Long-term credit normally is extended to purchase farm real estate. Mortgage financing typically involves large sums of money and amortization periods of 10-30 years. Furthermore, the demand for these loans depends on the expected income and asset appreciation potential in farming, the cost of capital, and the need to finance intergenerational asset transfers. The high cost of these loans leads to interest-rate sensitivity, particularly for ARM's because small changes in interest rates cause large changes in interest payments. These loans are often refinanced when interest rates decline to lock in lower fixed-interest-rate loans.

Roughly 2-5 percent of farmland changes hands each year, much of which is purchased with borrowed money (Majchrowicz). Family owned and operated farms appear particularly dependent on debt financing. Retained earnings, when available, are often adequate to finance production expenses and may occasionally permit purchase of chattel investment goods, but are not normally used to finance land acquisition beyond the required downpayments.

Timing, flexibility, and the intensity of need distinguish short-, intermediate-, and long-term borrowing. Farmers can typically defer durable purchases and land purchases almost indefinitely, whereas operating credit is normally required for production. Long-term credit demand is the most sensitive to interest rate changes because amortization of a farm mortgage requires that the average rate of return on the land assets acquired exceed the interest rate on the loan over many years to be a profitable investment.

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<sup>13</sup>The three major variables used in estimating the demand for agricultural credit are: farm income, interest rates, and the value of assets used for collateral. Expected values of these variables are often also important.

It is therefore reasonable to assume that the demand for long-term credit is interest elastic.

Investment financing can be obtained from owner equity, including retained earnings, or external borrowing. Since both retained earnings and investment demand depend on the demand for agricultural products, farm credit markets react swiftly to changes in the demand for agricultural products. Such reactions have, over time, motivated the Federal Government to establish programs, such as the FmHA loan guarantee program, to provide farmers with financial services less subject to production and financial cycles. External financing has become increasingly important over the past 50 years, reflecting the larger size and mechanization of farm enterprises, higher farmland values, rising specialization and use of purchased inputs, and greater managerial sophistication (Freshwater and Sullivan).

### Other Borrower Effects

The above discussion has analyzed the effect of the secondary market for farm mortgages on both interest rates and the quantity of credit extended under alternative conditions. Secondary markets may, however, have other effects.

#### Effects on Land Values

If credit extended via the secondary market for farm mortgages lowers farm mortgage interest rates because of easy money conditions, then farmers can be expected over time to bid up land prices and capitalize this benefit into land values (Gabriel and Prentice). Farmers will benefit from revaluation to the extent that they are landowners (House Committee).

#### Effects on Other Credit Terms

Farmer Mac is expected to issue fairly stringent underwriting standards. Borrowers conforming to these standards will benefit from improved access to credit or lower interest rates, as discussed above. Loan application forms, credit terms, and the cost of loans to conforming borrowers are likely to become more standardized across lenders and areas of the country with the establishment of these markets (Kaufman). This may limit the flexibility of lenders to meet the special requirements of borrowers, particularly in the event of repayment difficulties.

Nonconforming borrowers, on the other hand, may be less able to obtain credit from private lenders because their loans will be less marketable. Lenders extending loans to nonconforming borrowers will need to accept 100 percent of default risk and commit their own capital to make these loans. There may also be less competition to make these loans because of the higher cost of loan servicing. Nonconforming borrowers are therefore likely to pay a higher interest rate for their loans and need to depend more heavily on Federal credit programs. The FmHA secondary market established by the 1987 Act may, however, provide some relief.

An important incentive for farm lobby organizations to support the Farmer Mac secondary market title was their belief that it would expand the availability of fixed-interest-rate loans (de la Garza). Life insurance companies and commercial banks have shied away from offering fixed-interest-rate loans because of increased interest-rate volatility and competition from the FCS that has existed since the late 1970's.

Because interest rates remain volatile, it seems unlikely that the secondary market would itself provide sufficient incentive for lenders to offer affordable fixed-interest-rate loans. The choice of variable over fixed-interest-rate mortgages reflects the fact that many borrowers would rather absorb the risk of volatile market interest rates than pay the risk premium associated with fixed-interest-rate mortgages. Because investors generally know less than lenders about the quality of loans and market conditions, investors are likely to require a larger risk premium than lenders on fixed-interest-rate loans. This is true even if only fixed-interest-rate mortgages can be sold on the Farmer Mac secondary market, as experience in the home mortgage market suggests. Consequently, borrowers will still be required to pay a risk premium to receive fixed-interest-rate mortgages, and that premium is likely to increase with a secondary market. Inasmuch as the Farmer Mac secondary market increases the competitiveness of the agricultural credit market, the size of the risk premium may vary more with changing market conditions, other things being equal.

If credit markets are tight and noncompetitive, the risk premium required by lenders could be quite high (Hester). Under these circumstances, the secondary market restricted to the sale of fixed-interest-rate mortgages might reduce the risk premium paid by borrowers. This effect would, however, be temporary, reflecting more the tight market conditions than an advantage inherent in the secondary market.

#### Distributional Effects

The Farmer Mac secondary market is limited to agricultural and rural housing mortgage loans, implying that benefits will favor conforming borrowers who use these kinds of loans. Farmers purchasing the most land will accordingly benefit the most from loan sales in the secondary market for farm mortgages. This will encourage the use of real estate to secure other debt.

#### **EXISTING SECONDARY MARKETS, CREDIT INSTRUMENTS, AND PUBLIC CORPORATIONS**

The Farmer Mac secondary market for farm mortgages is modeled after the secondary market for home mortgages. The analogy to the home mortgage market is helpful in understanding the credit instruments potentially available to Farmer Mac and the policy issues likely to evolve because of its GSE status. Farmer Mac has, however, been given fewer Treasury privileges and less discretion to pursue public policy objectives than other GSE's.

#### Credit Instruments Used in Secondary Markets

The Farmer Mac proposal is modeled most closely after Ginnie Mae, which does not purchase loans for its own portfolio. It is not clear what credit instruments Farmer Mac will have for use in promoting the secondary market, particularly as Congress considers possible amendments to the enabling legislation. Consequently, it is helpful to survey the instruments available in other secondary markets. These include the sale of whole loans, the underwriting of securities, the use of commitments, and the provision of guarantees.

## Sale of Whole Loans

The resale market for home mortgages, or the whole loan market, is the oldest secondary market. Whole loan sales involve the sale of mortgages by the lender, typically a thrift, to investors such as another thrift, a pension fund, or a life insurance company. Prior to the chartering of the GSE's, whole loan markets were regional and substantially illiquid because of the lack of generally accepted underwriting standards, reliable pricing information, and suspicion generated by the use of this market for problem loan sales (Reade). With the chartering of Fannie Mae, Ginnie Mae, and Freddie Mac, the whole loan market divided into a market for loans meeting (conforming) and not meeting (nonconforming) GSE standards.

Some private traders have specialized in nonconforming loans because of the potentially higher margins to be earned. This market ironically has benefited from GSE standards almost as much as the conforming market. The conforming market provides reliable information about market conditions and a yardstick for comparison that is useful in pricing. The primary nonconforming loans currently traded are "jumbo" loans, which exceed the dollar ceilings imposed by the GSE's (Tuccillo; Bergman). ARM's have been part of the nonconforming market, but were recently added to the list of loans qualifying for sale on the secondary market.

## Securitization and Other Pooling Arrangements

The secondary market allows originators the opportunity to share risk with investors through hedged transactions. The chief risks in extended term mortgage loans are default, loss of the value of payments due to interest rate changes, loss of principal value with inflation, and loss due to foregone opportunities with loan prepayment. Not all secondary market transactions are hedged, however, because some participants must be willing to assume the risk. This section reviews the major securities and market strategies employed by participants in secondary markets.

Bonds. A bond is a promise to repay the principal with interest in fixed payments over the term of a loan. Bonds were the primary instrument used by GSE's prior to the development of pass-through securities. Bond issues can be hedged by matching bond and loan maturities. GSE's have not typically hedged their transactions because hedging is a strategy for reducing risk and is less profitable than maintaining an open market position. Issuing bonds is a reasonable management strategy in periods of stable interest rates, but it allows management little or no flexibility to make portfolio adjustments as interest rates vary. When interest rates are stable, by contrast, lenders can make more profit by purchasing short-term debt to cover long-term debt sales (maturity intermediation). This strategy works when interest rates are stable because short-term debt carries a lower interest rate than long-term debt. Problems arise, however, because the lender is exposed to the risk of interest rates rising over the course of the long-term loan.

Pass-Through Securities. A pass-through is a security in which all payments of interest and principal are forwarded from the mortgage pool to the investor (Parvel). Several varieties of pass-through securities have evolved. They differ by GSE and composition of mortgages in the pool. Ginnie Mae securities, a pass-through guaranteed by Ginnie Mae, are composed of FHA, VA, and FmHA mortgage loans. Participation certificates, a pass-through guaranteed by Freddie Mac, and mortgage-backed securities, a pass-through guaranteed by Fannie Mae, are composed of conventional and seasoned FHA and VA

mortgage loans (Federal Home Loan Mortgage Corporation, 1984). The term "seasoned" refers to old debt that may or may not meet current GSE underwriting standards. A recent article reported that Ginnie Mae and Freddie Mac securities, while quite similar, sell at different rates because the underlying mortgages are subject to differing prepayment incentives (Navratil). For each pass-through, the GSE (or associated Government agency) provides a guarantee of timely payment of interest and principal.

**Mortgage-Backed Bonds.** Mortgage-backed bonds (MBB) are bonds collateralized with mortgage assets. Payments of interest and principal accrue to the issuer rather than being passed directly to investors, as in the case of a pass-through security. Because MBB's are a liability of the issuer, they are generally over-collateralized to insure against prepayment, default, and market risk of the underlying pool. Pass-through securities are sometimes used as collateral for MBB's (Parvel).

**Pay-Through Bonds.** Pay-through bonds are a hybrid between a pass-through security and a MBB. The security remains the liability of the issuer, but payments of interest and principal in the underlying portfolio are dedicated to servicing the bonds, unlike pass-through securities (Parvel).

Collateralized mortgage obligations (CMO's) are an important class of pay-through securities. CMO's are a debt obligation secured by conventional mortgages and issued in bond-like securities (Federal Home Loan Mortgage Corporation, 1984). CMO obligations are divided into tranches which receive equal access to interest payments, but are ordered in their priority in receiving repayment of principal. The first tranche, the one with the shortest maturity, receives all of its principal payments before any principal payments are made to the next tranche. Tranches are paid off consecutively until all tranches have been reimbursed or all payments have been received. Some CMO's include a final tranche that receives neither interest nor principal payments until all other tranches have been paid. This tranche is known as either an "accrual bond," "residual," or "Z-bond." Interest payments accrue to Z-bond holders because mortgage payments are received monthly, while CMO payments are made to investors semiannually. Payments also accrue to Z-bond holders when the mortgage prepayment rate is lower than expected, as is likely when interest rates rise (Konstas). Z-bonds accordingly accrue larger payments when interest rates rise and are popular among thrifts as a hedge against interest-rate risk. The SPI in the Farmer Mac legislation has many of the characteristics of a Z-bond.

CMO's have become popular since their introduction by Freddie Mac in 1983 because of their similarity to bonds and because they allow investors to express a prepayment risk preference (Villani). Thrifts had been the primary lenders to hold pass-through securities before CMO's were introduced because thrifts have been accustomed to accepting prepayment risks and receive a bad-debt deduction in the tax code (Roll; Moran, 1985). Most privately issued CMO's have been collateralized with GSE pass-through securities rather than the underlying mortgages to reduce risk borne by the issuer (Comptroller General).

CMO's had been taxed as corporations prior to the Tax Reform Act of 1986. The 1986 Act has eliminated double taxation of CMO's by permitting the formation of real estate mortgage investment conduits (REMIC's). A REMIC is not a new type of mortgage-backed security nor is it a new legal form of business organization. REMIC's are essentially pass-through tax entities that can issue mortgage-backed securities, often with multiple maturity classes, under

a variety of legal forms. REMIC's are allowed to own cash-flow instruments, such as CMO's, qualified reserve assets to insure against default, and real properties for up to 1 year following foreclosure (Konstas). REMIC's are taxed like partnerships rather than like corporations (Commerce Clearing House), and can be organized as a trust, partnership, or corporation (Konstas). The principal difference between a CMO and a REMIC is that REMIC's may have payment frequencies differing from the underlying mortgages. Moreover, REMIC issuers, unlike CMO issuers, cannot make minimum or maximum prepayment guarantees (Federal Home Loan Mortgage Corporation, 1986).

Swaps. Mortgage swaps are the exchange of seasoned mortgages for mortgage securities of equal value. Freddie Mac introduced mortgage swaps in 1981 to provide troubled thrifts with added liquidity (Federal Home Loan Mortgage Corporation, 1984; Parvel; and Murry and Hadaway). The secondary market also makes use of interest rate and currency swaps. An interest-rate swap is a transaction in which interest payments on fixed-interest-rate debt are exchanged for interest payments on variable-interest-rate debt of similar maturity and quality (and vice versa). A currency swap is similar: interest payments in a foreign currency are traded for interest payments in one's own currency. The FCS, Sallie Mae, and Fannie Mae have all employed interest-rate and currency swaps to reduce their financing costs (Altman; Moran, 1985).

The incentive of a thrift or bank to engage in a mortgage swap transaction is to increase the liquidity of its portfolio, because a security can be sold more readily than a mortgage, and to earn loan servicing fees (Comptroller General). The issuer bears market risk during the few hours or days between the time that mortgages are committed and a pool is assembled, but the swap transaction can otherwise be considered a hedge against interest-rate risk (U.S. Department of Housing and Urban Development). The issuer receives a commitment fee for accepting a mortgage into its pool, and a guarantee fee if it guarantees the pool against lender default (Advisory Committee).

### Commitments, Advances, and Placements

A commitment is a contract to purchase loans in the future at a specified interest rate, much like an insurance policy (Johnson and Murphy), for which the holder pays a fee. Lenders purchasing these commitments have the option to deliver conforming loans during any period ranging from several months to more than 1 year or to cancel the commitment. Commitments have been used by Fannie Mae, Freddie Mac, and Ginnie Mae to stimulate the supply of home mortgages during periods of credit rationing (Jaffee and Rosen) and have been an important revenue source. Commitments should not be confused with guaranteed loan commitments, which are an instrument of the primary market rather than the secondary market. Guaranteed loan commitments are a contingent liability of the Government that was substituted for direct loans after the Congressional Budget Act of 1974 authorized their exclusion from reporting in the Federal budget (OMB). An advance, used by Sallie Mae in the market for student loans and by the Federal home loan banks (FHLB's) in the home mortgage market, serves roughly the same purpose as a commitment except it takes the form of a noncollateralized loan (Phaup).

A placement is the purchase of a loan that closes out a commitment or an advance. The availability of commitments and advances substantially reduces the risk to originators, particularly between the time the borrower's rate is locked in and a loan is placed (Gabriel, Cammarota, and Rothberg). While commitments and advances are expansionary, placements are usually

contractionary because financing a placement requires selling bonds, which may raise interest rates (Jaffee and Rosen).

### Insurance and Guarantees

Investors get the benefit of insurance against several risks when they buy into a mortgage pool. First, the lender typically minimizes the likelihood of default by adhering to the pooler's underwriting standards, requiring either mortgage insurance or a large downpayment by the borrower, and meeting capital adequacy or loan loss standards. Second, the pool originator guarantees timely payment of interest and principal, minimizes the default of individual borrowers through diversification in establishing the pool, and insures against the default of the lender, on request, for a fee. Third, an active market in the stated securities reduces losses suffered as a result of illiquidity (Tuccillo, Van Order, and Villani). Variations in the distribution of risks among market participants, as set forth in legislative provisions and underwriting standards, determine the incentives to purchase, originate, guarantee, and invest in loans (Phaup and Emery).

Kaufman and Villani outlined three benefits of Government guarantees. First, actuarially sound Federal default insurance programs improve capital market efficiency at no Government cost. Second, because the average saver is risk averse, Federal guarantees increase the savings rate. Third, Federal guarantees make financial instruments more homogeneous, reducing transaction costs and improving market efficiency.

### Existing Secondary Mortgage Markets

Several active secondary markets have been established, including the secondary markets for home mortgages, student loans, and credit card receivables. The benefits of an active secondary market may include:

- o A better interregional flow of funds,<sup>14</sup>
- o Attraction of capital from a wider range of sources,
- o A reduction in lender interest rate risk and an increase in lender portfolio diversification,
- o Easier intervention in reducing the intensity of business cycles,
- o A more equitable borrower access to credit, and
- o Reduced coupon rates for conforming loans (Comptroller General; Follain).

These benefits may accrue to newly instituted secondary markets that have hitherto not been well integrated into the wider capital market. As linkages evolve between capital markets, the channeling effect of a secondary market

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<sup>14</sup>Differences in mortgage interest rates among the Nation's regions--North, South, East, and West--are statistically significant, but the level of significance and the coefficient of variation ( $R^2$ ) have declined since 1970 when the secondary market for conventional loans, originated by thrifts, was established (Morrell and Saba).

may become less important and loans will be extended in the primary market based more on borrower merit (House Committee).

### The Home Mortgage Market

In 1985, \$308 billion of new housing credit was extended by thrifts, banks, pension funds, life insurance companies, GSE's, and other lenders (Federal Home Loan Mortgage Corporation, Secondary Mortgage Markets). The primary credit instruments in this market are 30-year fixed- and adjustable-rate mortgages, although other instruments and terms are available. Home mortgage loans are for single or multifamily properties and are originated by private lenders (that is, "conventional" loans) or by a number of public lenders, including the FmHA, FHA, or VA.

Fannie Mae is the oldest GSE active in promoting a secondary market for home mortgages, and was chartered in 1938 as a subsidiary of the Reconstruction Finance Corporation. Fannie Mae has purchased FHA-insured loans for its portfolio during periods of slack demand and has sold loans during periods of strong demand. During the early years, Fannie Mae initiated the practice of offering "advance commitments" that signaled to the market the intent to purchase loans. Fannie Mae was chartered by Congress in 1948 and was authorized to purchase VA-guaranteed loans. Further authorization to sell bonds, capital stock, and other securities was granted in the Housing Act of 1954 to make Fannie Mae less dependent on Government financing and to reinforce Fannie Mae's reserve role in the housing market. A tension has accordingly existed between Fannie Mae's charge to minimize both its disruption to the home mortgage market and its responsibility to limit the Federal Government's loss exposure from the guarantee implicit in its reserve role (U.S. Department of Housing and Urban Development).

The Housing Act of 1968 responded to this tension. The 1968 Act split Fannie Mae into two new agencies: one privately held (Fannie Mae) and the other a Government agency (Ginnie Mae). Fannie Mae retains some Treasury-borrowing privileges, but is a privately held corporation. Ginnie Mae deals solely in Government-guaranteed mortgages as an agency in the U.S. Department of Housing and Urban Development (HUD) (Federal Home Loan Mortgage Corporation, 1984).

The mood to cut back Government participation in the housing market was quickly reversed. The Emergency Home Finance Act of 1970 created a new public corporation, Freddie Mac, as part of the FHLB system. Freddie Mac was mandated to service the conventional loan market originated by thrifts as Fannie Mae and Ginnie Mae had serviced FHA and VA loans. Fannie Mae was also authorized to acquire conventional loans for its portfolio. The primary motivation for this legislation was to provide access to loanable funds to thrifts and banks throughout the business cycle and to improve their links to the capital market. The business cycle was particularly pronounced for deposit institutions because Regulation Q encouraged depositors to withdraw funds whenever interest rates rose above stipulated interest-rate ceilings (Advisory Committee).

While Fannie Mae has had the authorization to issue bonds backing its loan portfolio since 1954, Ginnie Mae issued the first pass-through security in 1970 as a mechanism for marketing FHA and VA loans (Parvel). The pass-through security was a breakthrough for all GSE's because it passed liquidity forward to the primary market and interest-rate risk back to investors, and allowed the GSE's to hedge transactions more efficiently. Pass-through securities also provided fee income and greater management flexibility to the originating

lender and spurred the development of a new class of innovative financial instruments.

Any credit institution able to underwrite securities can issue a home mortgage pool. The GSE's retain the largest share of this market because of their superior capital base, special Treasury privileges, exemption from SEC registration, and other advantages (table 1). These advantages enable the GSE's to produce financial services at lower cost than can competing private firms (Phaup).

The use of the secondary market for home mortgages has grown exponentially in the 1980's, nearly doubling in size from 1982 to 1986. Since 1982, more than 60 percent of the growth in home mortgage debt has been sold in the secondary market as mortgage-backed securities (Gabriel, Cammarota, and Rothberg). Growth can be attributed to the increasing computerization, technological change in telecommunications, deregulation, standardization of mortgage contracts, an increase in the demand for long-term financial obligations, and the lenders' desire to restructure their portfolios (Follain).

### The Market for Student Loans

A primary market for student loans was created in 1965 as part of the Guaranteed Student Loan Program (GSLP). Under this program, loans extended by private lenders and educational institutions are guaranteed by the Federal Government through the U.S. Department of Education. The Higher Education Act of 1972 established Sallie Mae to administer a secondary market for student loans that would increase the funds available to lenders under the GSLP (GAO). In 1984, Sallie Mae purchased \$1.5 billion of student loans and extended another \$1 billion to lenders in the form of "warehousing advances" for extending additional loans (Phaup).

Warehousing advances guarantee a market for student loans and provide the necessary liquidity to extend them. Warehousing advances also allow Sallie Mae to intervene in the primary market by reducing the uncertainty involved in originating loans for resale. In 1984, Sallie Mae's warehousing advances accounted for roughly a third of the new student loans extended (Phaup).

Sallie Mae promotes a secondary market for student loans through its loan purchases. Funds are raised through a variety of debt instruments, but Sallie Mae has not securitized student loans. Sallie Mae has, however, innovatively used interest-rate and currency swaps as a mechanism for maintaining the profitability of its financial offerings (Moran, 1985 and 1986).

Sallie Mae has been profitable to the point of controversy because of its agency status in credit markets. It primarily handles student loans guaranteed by the GSLP, and, as a consequence, bears almost no risk in its portfolio (Phaup). The GSLP, administered by the U.S. Department of Education, by contrast has suffered substantial default losses in recent years because higher interest rates and reductions in other forms of student aid have encouraged greater use and abuse of the program. The program has extended more than \$60 billion in student aid since 1965 and has suffered some \$4 billion in defaults, \$1.3 billion in FY 1986 alone (GAO).

### CAR's, CARD's, and Other Secondary Markets

The formation of secondary markets hinges critically on the ability of intermediaries to package debt in the form of new financial instruments that

meet borrower needs and preserve investor confidence. Two recently organized secondary markets are based on innovative financial securities. Certificates of automobile receivables (CAR's) are pass-through securities that pass on interest and principal payments for automotive loans to investors. Similarly, certificates of amortizing revolving debts (CARD's) pass on interest payments on credit card debt while investing principal payments in new receivables. In both cases, the originator insures the loans either by guaranteeing repurchase of a certain percentage of defaulting loans (CAR's) or by establishing a reserve fund greater than the historical default rate of the debt (CARD's) (Parvel; Luckett and Westfall). Other private secondary markets have recently been organized for computer leases, service center receivables, and truck leases (Farrell).

### The Government-Sponsored Enterprises and Regulation of Secondary Markets

A number of public policy objectives can be pursued with, or in overseeing, a GSE, including:

- o Maintenance of financial viability,
- o Access to credit versus credit subsidies and minimization of Government expense through privatization,
- o Primary market stabilization and enhancement of market liquidity, and
- o Minimizing GSE intervention in credit markets.

These objectives can be pursued through the timely use of commitments, advances, guarantees, purchase/sale of securities, and hedged/open transactions.<sup>15</sup>

### Maintenance of Financial Viability

The primary objective of Federal GSE oversight is to maintain GSE financial viability. No GSE has defaulted on its debt, but the rapid increase in interest rates in the late 1970's and early 1980's caused several GSE's severe distress and the FCS to seek congressional assistance (Murry and Hadaway). Interest-rate risk is a problem for any financial institution that engages in maturity intermediation. Among the GSE's, Fannie Mae suffered most from rising interest rates in the 1980's. Fannie Mae attempted to grow out of its losses by purchasing a large volume of high-coupon debt, by increasing its fee income on mortgage-backed securities, and by more closely matching the maturities of its assets with that of its liabilities (Comptroller General). The FCS likewise suffered losses due to the mismatching of assets and liabilities.

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<sup>15</sup>Penner and Silber (1973) classified Federal credit programs as wedge (interest-rate subsidy) programs, portfolio-restriction (such as Regulation Q) programs, and risk-altering programs. Government guarantee and secondary market programs were seen to alter the risk of credit instruments and, thereby, to make these instruments more attractive to investors.

## Access to Credit Versus Credit Subsidies

An important objective of providing Federal charters to some GSE's has been to enhance the flow of subsidized credit to distressed or disadvantaged borrowers (Lombra and Waslenko). Fannie Mae, for example, began as a program for marketing FHA loans during the Great Depression. The FCS likewise began as a program to develop cooperative lending institutions that would assure farmers a stable supply of low-cost credit.

GSE's, while once chartered primarily with Federal capital, have most recently been capitalized through the issuance of common stock, bonds, and other securities. Sallie Mae was, for example, able to borrow all the money necessary to establish itself (Phaup). Limits on the supply of loanable funds in private markets may indirectly impose a cost on the Federal Government by raising the cost of borrowing under other Federal programs. The U.S. Treasury accordingly has an interest in minimizing the borrowing of GSE's (Comptroller General).

The move to privatize GSE's has been an attempt by the Government to distance itself from the liability implicit in agency status and to allow private firms greater share in the benefits of viable secondary markets. While explicit action was necessary to convert the older GSE's, such as Fannie Mae, into quasi-private entities, GSE's established more recently, such as Sallie Mae, have been given less freedom to engage in highly leveraged operations. Securitization of secondary market operations has enhanced the Government's ability to limit GSE potential liabilities because these enterprises can hedge virtually all of their transactions. The risk to the Treasury of these enterprises is accordingly reduced and privatization is less of an issue, except as public enterprises displace private firms from profitable business.

The Secondary Mortgage Market Enhancement Act of 1984 represents the most recent effort to privatize secondary mortgage markets. The 1984 Act removed statutory limits on thrift investment in mortgage-backed securities, exempted securities from State registration, and facilitated development of private forward markets in these securities. The 1984 Act further limited the size of eligible mortgages and prohibited Freddie Mac from guaranteeing private security originations (Seiders; Murray and Hadaway).

## Primary Market Stabilization and Enhancement of Market Liquidity

A perceived need to channel funds into particular markets and to maintain the financial integrity of borrowers has often motivated attempts to stabilize the primary market. Primary market stabilization involves increasing credit when the primary market lacks loanable funds and reducing credit when funds are in surplus. Secondary market operations facilitate stabilization because the sale of loans provides lenders with additional liquidity. A GSE can accordingly regulate liquidity by speeding up or slowing down its pooling or its use of commitments and advances. This stabilization insulates the primary market from business cycles and macroeconomic policy (House Committee). In housing, the objectives of this policy have been to stabilize employment in new home construction and to reduce inflation due to high-cost shelter. This policy accordingly complements the objectives of maintaining the financial viability of borrowers and lenders, and the provision of supplementary assistance to distressed or disadvantaged borrowers.

The rapid expansion of secondary mortgage market securities in the 1980's complemented deregulation of banks, thrifts, and other depository

institutions. Deregulation eliminated interest-rate controls on most deposits by letting commercial banks and thrifts pay competitive rates for those funds. Deregulation of interest rates was mandated in the Depository Institutions Deregulation and Monetary Control Act of 1980 and the Garn-St. Germain Depository Institutions Act of 1982 (Federal Reserve Bank of Chicago). Cyclical disintermediation in the home mortgage market was reduced, but the privileged access to low-cost investment funds that banks and thrifts previously enjoyed was lost (Cho; Meyerson).

The housing market has clearly become less sheltered as a result of deregulation and the growth of secondary mortgage markets. Links between the mortgage and wider capital markets were strengthened as reflected in the threefold increase in the rate of responsiveness of mortgage interest rates to changes in the yield on Treasury bonds. Roughly 20 percent of a change in 10-year Treasury bills was reflected in mortgage interest rates within a week in the mid-1970's. By 1986/87, roughly 80 percent of a change was evident within a week. Deregulation has accordingly increased interest-rate volatility (Roth; Gabriel, Cammarota, and Rothberg).

### Minimizing GSE Intervention in Credit Markets

The objective of minimizing GSE intervention in credit markets is an attempt at drawing a line between the public and private uses of agency status. Private firms and investors are supposed to benefit from publicly provided guarantees, credit from newly created secondary markets, and countercyclical interventions. Private firms should not, however, receive "excessive" subsidies and the GSE's should not profit at the expense of private firms from secondary market operations. These lines are hard to draw, but they are motivated by the need to reduce budgetary outlays and by strongly held beliefs about the proper role of Government in financial markets.

## **THE FARMER MAC SECONDARY MARKET FOR FARM MORTGAGES**

The Farmer Mac secondary market must overcome several hurdles in its initial stages. Chief among these is the potential problem of acquiring a sufficient volume of mortgages to pool. The size of the market that emerges hinges on the underwriting standards adopted and the participation of the FCS. The FCS' incentive to participate will depend on the profitability of balance-sheet compared with off-balance sheet activities, which is determined by both regulatory requirements and investor's valuation of these assets. Investors are likely to purchase Farmer Mac-guaranteed securities, provided that they serve a need and can be competitively priced. The existence of the FCS bond market will, however, limit the degree to which the Farmer Mac secondary market can expand the market for farm mortgages or improve efficiency.

### Feasibility

The workability of provisions outlined in the 1987 Act remains uncertain. Most private efforts to organize a secondary market for farm mortgages have failed, reportedly because of the extensive capital requirement for sponsoring a national market and the high-risk premium likely to be required by investors (Kaufman). A high risk premium is expected because of general uncertainty in the farm sector created by policy changes and financial stress, and because borrower repayment depends on business profits rather than on salary income, which is generally more stable. These characteristics distinguish farm mortgages from home mortgages and make farm mortgages a riskier investment.

Uncertainty also arises because of political opposition to the legislation. Charles Sethness, Assistant Secretary of the Treasury, outlined five objections to the Farmer Mac proposal: (1) It would threaten the financial viability of the FCS; (2) The FCS already functions as a secondary market; (3) Farm loans are business loans, which makes them riskier than consumer housing loans; (4) The benefits of the secondary market accrue primarily to commercial banks and life insurance companies rather than to farmers; and (5) There is little need to funnel funds into the agricultural sector because of surpluses and productivity gains (House Committee). Opposition during the congressional debate resulted in Farmer Mac being structured with fewer powers than previous GSE's. These restrictions will likely raise the cost of Farmer Mac securities relative to FCS bonds and other GSE securities.

### Institutional Viability

Two provisions of the 1987 Act potentially impede Farmer Mac's institutional viability. First, since Farmer Mac may strengthen the competitive position of private lenders relative to the FCS, the FCS could use its influence and representatives on Farmer Mac's board of directors to frustrate Farmer Mac's administration. Second, Congress set forth a series of deadlines for implementation of Farmer Mac's establishment, as shown in table 5. In view of Administration opposition and the timetable set forth by Congress, it seems unlikely that Farmer Mac will begin market operations before late 1989. Because the dissemination of rules and procedures in the private sector will also take time, it will likely be 1990 before securities are actively traded, even under favorable conditions.

### Commercial Viability

Farmer Mac's commercial viability depends on the size of its market. Two points are critical in the new market's evolution. The first point appears where economies of scale in pooling can be achieved. Economies of scale exist when the unit cost of issuing a security of fixed denomination declines as the size of the pool increases. This occurs because overhead legal and administrative costs are fixed, regardless of the size of the pool. Past research and common practice suggest that \$100-\$300 million of mortgage assets are required to attain most economies of scale (Silber).

The second point will come as the total number of securities outstanding rises to the point where securities are actively traded. An active market increases a security's value by improving pricing and liquidity. Security industry rules of thumb suggest that at least \$2 billion of securities outstanding with annual originations of roughly \$500 million are required to support active trading. A study of the market effect of Ginnie Mae pass-throughs reported that the cost of financing declined 16 basis points for every \$10 billion of additional pass-throughs marketed (Black, Garbade, and Silber).

Several factors will significantly affect the number of mortgage loans offered for sale in the secondary market. First, each pool may be treated as a separate market because of the unique characteristics of individual loans. Different farm enterprises have different cash-flow, prepayment, and default characteristics, and these enterprises seek loans at different points during the year. The need to avoid interest-rate changes will restrict the time period over which mortgages are sought for a given pool and, as a consequence, will sort out particular enterprise types. Differences in the clientele served by lenders may have similar effects. Second, seasoned debt may not meet mortgage documentation standards. Therefore, at least initially, only

Table 5--Time horizon for Farmer Mac's institutional development

| Months | Action required by 1987 Act  |
|--------|--|
| 0      | Legislative enactment on January 6, 1988   |
| 3      | Presidential appointment of the interim board  |
| 9      | Presidential appointment of the permanent board and its chair                                    |
| 12     | Permanent board issues underwriting and pooler certification standards                           |
| 16     | Congress completes its review of the proposed underwriting and certification standards <u>1/</u> |

1/ If everything proceeds on schedule, market operations could begin after May 6, 1989.

Source: de la Garza.

originations are likely to be pooled.<sup>16</sup> The secondary market in home mortgages has consisted entirely of new debt until Freddie Mac instituted a mortgage swap program in the 1980's whereby it purchased seasoned mortgages for its portfolio in exchange for securities backed by those mortgages. Farmer Mac is not, however, authorized to hold mortgages in portfolio. Third, underwriting standards may eliminate a substantial proportion of new debt from inclusion in mortgage pools. The standards could, for example, permit only fixed-interest-rate mortgages to be pooled or only loans from farmers with debt-to-asset ratios below 30 percent.

Congress has also placed limits on the total principal that Farmer Mac can guarantee during its first 3 years of operation. Recognizing that the development of regulations will likely delay market operations until 1989, the first of the 3 years (that is, 1988) of congressional restrictions will not pose a constraint. During the second and third years of restrictions, however, Farmer Mac can guarantee an additional 4 percent and 8 percent of outstanding agricultural real estate debt, excluding FmHA debt.

In 1987, agricultural real estate debt outstanding in the United States was \$82 billion. Of that, FmHA loans accounted for \$9 billion (USDA, 1987). Four percent of that year's adjusted debt outstanding (\$71 billion) was \$2.8 billion, and 8 percent was \$5.7 billion. Since these limits are cumulative, the limit in year two (1989) is \$4.2 billion and is \$9.9 billion in year three (1990). Given the statutory minimum size of a pool (50 loans at \$50,000 each,

<sup>16</sup>Supporters of the Farmer Mac legislation believe that mortgages held by life insurance companies are well-enough documented to be sold on the secondary market, no matter what underwriting standards are adopted. This seems unlikely to be the case, however, because secondary market underwriting standards normally require that borrowers give permission to have their loans resold. Because no secondary market existed at the time when these loans were made, no permission is likely to have been sought.

or \$2.5 million), and assuming total agricultural debt remains at the 1987 level, Farmer Mac could guarantee more than 1,685 pools of private debt during its first year of operation (that is, year two or 1989). Considering the legal and administrative costs involved in issuing securities, an investment banker has estimated that a private pool must have \$50 million in assets and a public pool needs \$100 million in assets to be commercially viable (Johnson and Murphy).<sup>17</sup> Freddie Mac pools, for example, have ranged in size from \$100 million to \$200 million in mortgage assets (Morrell and Saba). Assuming \$100 million pools are an economic minimum, 42 such pools could legally be issued in Farmer Mac's first year.<sup>18</sup> Assuming a pool size closer to that optimal in view of market economies of scale in public agency issues (\$300 million), Farmer Mac could issue only about 14 pools of private debt in the first year (Silber). Consequently, if Farmer Mac guarantees all the private debt legally permitted in its first year, between 14 and 42 pools can be issued.

Barring a rapid increase in originations, this legislative limit on the principal that Farmer Mac can guarantee will likely not pose a binding constraint on the pooling of private farm mortgage debt. Private originations by commercial banks and life insurance companies in 1986 were roughly \$2.4 billion (table 4). This will be enough to issue a maximum of eight optimal-sized pools, but only if every loan is sold in the secondary market. Market limitations may therefore be more likely than legislative limitations to restrict growth of the secondary market.

FCS originations provide the largest potential source of mortgages to be pooled and FCS originations are not subject to the congressional debt ceiling imposed on Farmer Mac. It is not, however, clear that the FCS will pool its debt. Two potential problems may arise. First, FCS is limited by the borrower's right to not have a mortgage loan pooled. Second, FCS may elect not to participate in the secondary market. In FY 1987, the FLB's originated \$2.6 billion of new debt (table 4). This volume of new loans is sufficient to issue a maximum of eight optimal-sized pools, assuming that all loans meet the underwriting standards and are sold in the secondary market.

The market in eligible originations therefore totals an annual maximum of \$5 billion. This assumes that originations remain at their 1987 level, that all originations meet the underwriting standards, and that all are sold on the secondary market. This sum is sufficient to issue a maximum of 16 optimal-sized pools per year. Whether or not this level of secondary market activity is reached depends heavily on participation of the FCS, incentives for other lenders to participate, and the strictness of the underwriting standards adopted. Participation in the secondary market for home mortgages currently makes up about 60 percent of originations (Gabriel, Cammarota, and Rothberg). It accordingly seems unlikely that more than half of all new farm mortgage

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<sup>17</sup>"...the semi-fixed nature of issuance costs and underwriting expenses as well as the start-up organizational and registration costs for the first pool may necessitate an issue of \$50 million or more. And many institutional investors will demand a slightly higher yield for purchasing tranches of less than \$25 million, for fear of illiquidity in the future..." (Lazard Freres and Co.).

<sup>18</sup>In putting together the secondary market title, Congress assumed an average pool size of \$100 million (House Committee).

debt will be sold in the secondary market during its formative years. This amounts to formation of only eight pools per year.<sup>19</sup>

### Participation

Lenders and poolers will not face the same incentives to participate in the secondary market. The incentives to participate will depend on the distribution of costs and benefits, market and firm structure, and regulatory requirements. Lenders who are able to leverage fee income over the smallest commitments of capital to principal and loan loss reserves will gain the largest benefit from secondary market participation.

### The Structure of Incentives

Lender characteristics, market structure, and several provisions of the 1987 Act significantly alter the incentives to participate in the Farmer Mac secondary market.

Lender Characteristics. Several characteristics distinguish farm mortgage lenders and will affect their incentives to participate in the secondary market. First, some lenders, for example, commercial banks and machinery dealers, are primarily loan originators and others, such as life insurance companies and pension funds, are primarily investors. Institutions that specialize in either originating or investing in farm mortgages are likely to benefit more from the efficiencies generated by a secondary market. Second, lenders with tight constraints on loanable funds are more likely than those with loose constraints to use the secondary market for farm mortgages because tightly constrained lenders stand to gain more from improved liquidity. From this perspective, small banks will gain more than large banks and regions with a relatively low savings rate or high investment rate will also gain more from participation than will regions with a high savings rate or low investment rate, other things being equal. Third, lenders in competitive regional markets are more likely than lenders in less competitive markets to be early users of the secondary market for farm mortgages. Selling a loan on the secondary market allows the lender to leverage fee income over a smaller commitment of capital to loan principal and reserves. The average rate of return accordingly rises, giving innovators a competitive advantage.

Market Structure. The competition among poolers and the terms of trade between originators and poolers depend on the FCS policy regarding the secondary market for farm mortgages and the size of the market. The FCS' large share of the primary market may provide an exclusive FCS pooler an unassailable edge in assembling pools. An exclusive pooler would have privileged access to more than half of all originations and would be able to assemble larger pools faster than private poolers. Both size and speed will cut costs and will provide an exclusive pooler with an advantage in bidding on all private market originations. This advantage will decline, however, as the total number of private, eligible originations increases. Given both the possibility of earning attractive fees and the FCS' current need to build reserves, it is likely that the FCS will participate in loan sales. It is unclear, however, whether the FCS will designate an exclusive pooler or allow

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<sup>19</sup>John C. Dean, representing the Independent Bankers Association of America, testified that he thought participation in the secondary market would ultimately range between 20 percent and 30 percent of new originations (House Committee).

constituent institutions to market mortgages competitively through independent poolers.

The number of poolers competing in the secondary market for farm mortgages will more likely be limited by the number of eligible originations than by strict Farmer Mac certification standards. Poolers are likely to compete vigorously in the first few years to establish themselves in this market. This competition may benefit originators at the expense of the economic viability of the pools and poolers because competition is likely to reduce the average size of pools. Once the market stabilizes, however, the average size of pools is likely to increase. The terms of trade may then shift more in favor of poolers because poolers are likely to become more experienced than originators in using the secondary market for farm mortgages.

**The 10-Percent Reserve.** Secondary market loan sales permit originators to earn the same origination and servicing fees as earned in portfolio sales while allocating less principal, capital, and reserves to the sale than are required for loans held in portfolio. This leveraging effect raises the rate of return on originations and provides an important incentive for secondary market participation. The organization of Farmer Mac reserve requirements, and those of other regulators, will accordingly have a significant effect on participation in the secondary market for farm mortgages.

The 1987 Act requires originators and their pooler to hold a reserve of either a 10-percent escrow or a 10-percent SPI. If the average quality of farm mortgage loans rises over time, Farmer Mac may reduce the 10-percent requirement.

The 10-percent escrow reserve is straightforward. Originators and/or poolers must hold a cash account equal to 10 percent of the outstanding value of the pool principal. In case of default, losses are met by drawing on this account until funds in the account have been exhausted. Interest earned on the account in the meantime is distributed back to originators and the pooler based on their contribution less default losses.

The SPI is not defined in the 1987 Act, although its reserve role is defined.<sup>20</sup> In general terms, the SPI is an unguaranteed, residual claim on borrower payments, much like a Z-bond. Contracting with a trustee to manage pool receipts and disbursements can avoid potential conflicts of interest in the distribution of payments and default losses, but the role of the trustee has also not been mentioned in the 1987 Act. Originators, poolers, or, if securitized, the public may hold the SPI. The 1987 Act does not require that originators hold the SPI. Farmer Mac or pooler underwriting standards are likely, however, to require that originators hold at least some of the SPI to motivate them to originate good quality loans and to improve loan servicing.

The chief advantage of the SPI to originators and poolers is potentially its chief disadvantage to Farmer Mac. The SPI requires no advance commitment of reserves. Default losses are absorbed in the form of a lost stream of

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<sup>20</sup>The SPI is a source of much confusion and speculation. One author suggested that the SPI could be organized as a contingent liability of the pool through a letter of credit, surety bond, or other guarantee (Lazard Freres and Co.). This form of organization seems unlikely, however, because it would require that Farmer Mac insure 100 percent of the securities issued against the pool. In the event of default, Farmer Mac would have only the pool's promise that default costs would be paid.

payments. Critics argue that unless a "due on default" clause is added to the SPI, Farmer Mac is given an immediate liability--timely payment of principal and interest--while the originators' liability accrues over time. Farmer Mac accordingly pays the interest on the SPI liability. If originators and poolers are permitted to sell the SPI like a junk bond, Farmer Mac's liability may be further expanded because Farmer Mac may lose legal recourse in the event of irregularities in the origination and pooling process.

Whether the reserve is held as an escrow account or an SPI, it is a contingent liability that drains resources on default. Three loan-loss cost scenarios arise with a 10-percent reserve: no default, 0- to 10-percent pool default, and more than 10-percent default. The case of 0- to 10-percent default penalizes only the reserve holders because the pool bears the first 10 percent of all losses incurred (except when a pooler defaults). For default costs above 10 percent of the pool, losses are borne jointly by the reserve holders and Farmer Mac.

If Farmer Mac's losses are substantial, stockholders have an incentive to sell their stock before Farmer Mac considers assessing a nonrefundable capital contribution. This possibility suggests that shareholders are, under extreme circumstances, liable for more than 10 percent of pool losses.

An important advantage of the secondary market for farm mortgages is the relief it provides lenders from a portion of the capital and loan-loss reserves normally required when originating loans. If one regulator requires lenders to hold reserves against the total outstanding principal of loans sold on the secondary market while other regulators do not, then the lenders under stricter regulation will be competitively disadvantaged. This problem affects commercial banks because the Comptroller of the Currency and the FDIC treat loan sales as "sales," while the Federal Reserve treats loan sales as "financing" (Johnson and Murphy). There have recently been attempts to require all audited lenders to treat loan sales as originations and to hold reserves against them as a generally accepted accounting practice.

The Farmer Mac reserve requirement is a lender cost that may hinder participation if other less costly financing alternatives, such as FCS bonds sales, are available. Lenders with low reserve and capital adequacy requirements compared with the Farmer Mac requirement will be less interested in loan sales than will lenders with a high reserve requirement compared with Farmer Mac's, other things being equal.<sup>21</sup> Differences in reserve requirements accordingly affect the incentive of lenders to engage in balance-sheet versus off-balance sheet transactions, such as secondary market sales.

The role of the pool trustee is critical in this assessment of default liabilities. If a trustee is not assumed, then it is not clear what the flow of funds would be in this arrangement and assigning the management to different market participants, such as the originators, the pooler, or Farmer Mac, results in vastly different default liability scenarios. In particular, a problem arises once the originator has absorbed its share of the losses and it comes time for other participants in the pool to absorb their share of the first 10 percent of pool losses. While the originator took other parties in the pool to court, Farmer Mac would have to insure timely payment of principal

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<sup>21</sup>Reserves, in this context, mean a composite of deposit reserves, loan loss reserves, and capital adequacy standards (Baer).

and interest to investors. The absence of an orderly mechanism for transferring funds accordingly forces Farmer Mac to absorb the transaction costs imposed by defaults and liability legal cases.

Farmer Mac's ability to adjust the 10-percent reserve requirement may provide the basis to implement a risk-based capital requirement. A risk-based capital requirement mandates that regulators adjust reserve requirements to match expected default liabilities. Lowering the requirement to match expected default contingencies would both raise the rate of return on secondary market participation by leveraging fees over a smaller commitment of principal, capital, and reserves, and avoid the problem of penalizing low-risk loans with a high-risk insurance premium (Avery and Belton; Baer). It is not clear that Congress meant to permit a risk-based capital requirement, and no regulator has implemented such a program.

**Commitments.** The 1987 Act gives Farmer Mac the right to issue commitments to assist poolers in organizing mortgage pools, but does not precisely define commitments. A commitment is normally a contract to purchase a loan on specified terms at some point in the future and serves as insurance for the buyer against changes in the market. Farmer Mac's commitments differ from other GSE commitments because Farmer Mac's commitments are a secondary market rather than a primary market credit instrument.

Farmer Mac could interpret a commitment in several ways. A commitment could guarantee that a mortgage pool will be formed at a specified future date. Taking this a step further, a commitment could guarantee the pooler against interest-rate risk during the assembling of mortgages for a pool. Finally, a commitment could advance the pooler a noncollateralized loan to assist in establishing a mortgage pool. Because the legislation is silent on how to structure commitments, Farmer Mac may have considerable freedom in using commitments to promote the secondary market for farm mortgages.

The confusion over commitments arises, in part, because in other GSE's, which can hold loans in portfolio, a commitment is a promise to purchase loans in forming a GSE-organized and -guaranteed pool. Because Farmer Mac cannot purchase or pool loans directly, its commitments can only be used to induce poolers to purchase loans.

The fee Farmer Mac charges for commitments could be an important instrument for regulating competition in the secondary market for farm mortgages because the costs of pooling will vary among poolers. A flat fee will level the playing field while a variable fee, a fee for services rendered, will favor more efficient poolers.

**Farmer Mac Fees.** The secondary market title specifies that Farmer Mac set fees to be self-financing (actuarially sound). Commitment and annual fees are each limited to 0.5 percent, but Farmer Mac may also charge a fee to cover administrative costs.

Borrower defaults generally determine appropriate underwriting and capital adequacy standards and it is not clear that past default rates are to be expected in the future. Default costs have clearly been a problem. The FCS, life insurance companies, and FmHA delinquencies all exceeded 10 percent of outstanding debt in 1987, but this was unusual. FCS defaults were only 0.5 percent of outstanding debt as recently as 1981 (USDA, 1988a). Since default rates on farm mortgage loans remained low for 40 years following the Great Depression, it is not obvious how Farmer Mac should price its guarantee in the

future. Should the Farmer Mac guarantee, for example, be priced assuming that low default rates will resume and will remain in effect another 40 years? Or is it more realistic to assume that default rates will level off at a rate higher than the previous historical average?

Before answering this question, several public policy issues should be considered. First, what proportion of defaults reflect borrower, lender, and public policy error? An efficient insurance scheme allocates costs and risks according to their origin to avoid perverse incentives. If public policy decisions are responsible for a significant proportion of borrower defaults, then it may be inefficient to fund Farmer Mac losses through user fees. Second, is the secondary market for farm mortgages subject to scale economies? The Silber study suggested that this may be the case. If a large market is cheaper to administer than is a small market, or if improved loan pricing with the secondary market for farm mortgages lowers the number or cost of defaults, then it may be efficient to set Farmer Mac fees low in early years.

The maintenance of Farmer Mac's long-term financial viability is likely to be in conflict with other public policy objectives. The priority placed on the various objectives must be considered in setting Farmer Mac's fees and underwriting standards.

### Lender Incentives

The effects of a secondary market in agricultural and rural housing mortgages will differ among lenders for many reasons, including different activity preferences (lending versus investing) and varied access to national capital markets.

Commercial Banks. Commercial banks are expected to be the biggest beneficiaries of secondary markets for agricultural and rural housing mortgages. Commercial banks offer farm mortgage loans, but they are reluctant to offer many, however, because of the large commitment of principal required, the capital adequacy standards, and the poor match between long-term mortgage assets and short-term deposit liabilities. The secondary market for farm mortgages may lower the cost of mortgage originations by enabling banks to recover most of their principal, to remove mortgages from their balance sheets, and to hedge transactions.

Commercial banks and life insurance companies led the legislative drive to include a secondary market title in the 1987 Act. They argued that revisions to the FCS' enabling legislation, which encouraged consolidation of FCS short-, intermediate-, and long-term lending activities, gave the FCS an unfair competitive advantage. This advantage, the ability to offer "one-stop credit shopping," results because private lenders face liquidity constraints not faced by the FCS. The establishment of a secondary market for farm mortgages was seen as equitable compensation because it provides commercial lenders with equal access to the national capital market and, thereby, eliminates their liquidity constraints (House Committee).

Life Insurance Companies. Life insurance companies hold farm mortgages to diversify their portfolios and to match the long-term liability of their life insurance policies with long-term mortgage assets. While life insurance companies held 11.6 percent of total outstanding farm mortgage debt in 1986 (table 2), this debt represented only 1.4 percent of the total assets of the life insurance industry.

A secondary market for farm mortgages could benefit life insurance companies in several ways. First, life insurance companies will no longer need to originate farm mortgages to purchase them. Purchases can be made on the basis of portfolio profitability rather than out of need to maintain loan department productivity. Companies that have never originated farm loans may likewise purchase and hold them for the first time. Life insurance companies buy mortgages directly, rather than FCS bonds, because they want to match long-term assets against their long-term liabilities. FCS bonds are not necessarily a good substitute for Farmer Mac securities. FCS bonds normally carry a 3- to 5-year maturity, while the securities will likely be prepaid after 8-10 years. It is not clear, however, what the relative prices of FCS bonds and Farmer Mac securities will be. Second, an active secondary market in farm mortgage securities may reduce the costs of holding an illiquid asset and may improve loan pricing. The substitution of liquid securities for illiquid mortgage assets will reduce market risk and could increase the demand for mortgage assets. Third, several life insurance companies have expressed interest in becoming poolers.

The Farm Credit System. The effects of the Farmer Mac secondary market on the FCS cannot be assessed independently of both FCS policy toward the secondary market and changes in the FCS required by other titles in the 1987 Act. The FCS is the dominant firm in the primary market for farm mortgages, and the 1987 Act gave the FCS several options for dealing with Farmer Mac.

A secondary market for farm mortgages will benefit the FCS by providing better pricing information and by allowing more options in portfolio management. The secondary market for farm mortgages will permit the FCS to leverage its funds, to originate fixed-interest-rate mortgages without selling bonds, to market loans to a new set of investors, and to hedge transactions. This market may also allow the FCS a financing alternative unencumbered with borrowers' rights provisions. The FCS also has the right to set up its own pooler. This pooler may become an independent profit center, even if the FCS does not sell its own loans into the secondary market.<sup>22</sup> The secondary market for farm mortgages may become a more attractive financing option in the future if the current Farm Credit Administration proposal to require higher FCS capital adequacy standards (7 percent of capital at risk) is approved by Congress.

In the absence of a higher capital adequacy standard, the secondary market for farm mortgages may not pose an attractive financing alternative for the FCS. The FCS is likely to remain a portfolio lender because many of its loans may not meet Farmer Mac's underwriting standards and because portfolio management provides tremendous flexibility in pursuing policy objectives in the farm credit market. Several observations support this position. First, the FCS may have little incentive to sell loans on the secondary market because of its low capital adequacy requirements. Secondary markets evolved as a method to avoid holding capital reserves against loans in portfolio. Since the FCS' capital reserves are low (actual FLB reserves vary between 4.7 and -5.5 percent), the FCS had no need to worry about avoiding capital adequacy requirements in the past. Second, the FCS does not need the secondary market for farm mortgages to hedge transactions. Since the FCS already originates

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<sup>22</sup>If current law were amended, the FCS might find it advantageous to purchase Farmer Mac securities for its own portfolio. This would allow the FCS to take advantage of pecuniary market benefits and to be more effective in market stabilization, because a larger share of the loans outstanding would potentially be up for sale.

ARM loans, engages in interest-rate swaps, and matches bond issue maturities to loan maturities for fixed-interest-rate loans, it can already hedge its transactions.<sup>23</sup> A third problem for the FCS arises because Farmer Mac securities are likely to be more expensive to issue than FCS bonds because of SEC registration requirements and other requirements not required when the FCS issues bonds.

The secondary market for farm mortgages also entails some risks for the FCS. The chief risk arises because mortgage-backed securities may provide competing private lenders with comparable access to the capital market. This access is likely to reduce the cost advantages that bond sales provide to the FCS. Since this change comes at a time when the FCS is experiencing record losses, negative operating margins, and declining market shares, the FCS opposed the Farmer Mac title in the legislative debate. Other risks arise because the FCS' large size, cooperative structure, newly imposed regulations (particularly the consolidation requirements), and public charter may inhibit its management from responding quickly to a changing market. If the secondary market increases management requirements and decreases the time available to consider decisions, the new market may provide an inherent advantage to private companies with greater management flexibility.

The risks posed for the FCS may not be accidental. Critics argue that the FCS is inefficient and leaves the Federal Government liable for 100 percent of outstanding commitments. The secondary market for farm mortgages can therefore transfer some loan risk to the private sector and provide healthy competition for the FCS. Competition, it is argued, will require the FCS to assess its portfolio risks more realistically and may strengthen the FCS better than a Government bailout (House Committee).

The Congressional Budget Office cited several reasons why a secondary market for farm mortgages will not seriously hurt the FCS. First, the existence of prepayment risk will ensure that Farmer Mac securities bear higher interest rates than FCS bonds, which are noncallable. Second, Farmer Mac underwriting standards are likely to require a larger downpayment than are FCS standards to assure the issuance of high-quality securities. Third, if interest rates continue to decline, a switch to marginal cost pricing could increase FCS competitiveness. The Congressional Budget Office estimated that, assuming a 10-percent decline in the volume of FCS performing loans due to new competition, the secondary market for farm mortgages would neither increase nor decrease Federal assistance to the FCS by more than \$50 million over the next 5 years (House Committee).

The high-risk premium required by investors for new security issues and the startup costs involved in organizing a secondary market will likely provide the FCS with a cost advantage over mortgage securities for several years. FCS securities are well established in the market, and the recent amendments to FCS enabling legislation should reinforce investor confidence in its agency status. Over time, however, this cost advantage may decline as investors become accustomed to Farmer Mac securities and Farmer Mac administrators become more experienced. The speed at which relative costs converge will be

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<sup>23</sup>The concept of hedging transactions is currently unappealing to the FCS. Hedged positions are less profitable than open positions in the market because the premium for assumed risk is eliminated in hedged positions. Because the FCS needs to rebuild its capital reserve and earn revenues to offset losses incurred earlier in the 1980's, the strongest incentive is to retain an open market position, not to hedge its transactions.

determined by the efficiency of the secondary market and the size of the guarantee fees that Farmer Mac requires.

**Farmers Home Administration.** Because the Farmer Mac secondary market will serve the commercial market, and because the FmHA makes loans to farmers unable to qualify for commercial credit, Farmer Mac will have little direct effect on FmHA borrowers. The secondary market for FmHA loan guarantees will likely have many of the same effects on borrowers and lenders as the Farmer Mac market. The chief differences between these proposals are that the FmHA market will have a different structure and will service the high-risk segment of the primary market, and that investors are likely to value FmHA securities differently than Farmer Mac guaranteed securities. In this latter respect, investors may prefer FmHA securities over Farmer Mac securities because they carry the full faith and credit of the U.S. Government. FmHA securities will, however, be backed by mortgages and chattel loans with a higher default rate than the Farmer Mac securities. This could lead to higher prepayment risk on the FmHA and potentially could offset the advantage of the Government guarantee.

**Other Lenders.** A secondary market for farm mortgages could lower the capital requirements for lenders entering the farm mortgage market for the first time. While this feature may be attractive, other barriers to entry exist that may continue to discourage new entrants. Evaluating farm mortgage loan applicants is a highly skilled activity, and default risks are high. Because loan originators must bear the first 10 percent of defaults, the risk of default may discourage new entrants. Structural changes in the market for farm credit are likely to occur not because of new entrants, but because existing farm lenders will grow more skilled at using the secondary market and other innovative lending arrangements.

The secondary market for farm mortgages may not motivate lender entry into the farm mortgage market, but it could change the relative efficiency of existing lending institutions. An active secondary market could encourage greater specialization in agricultural lending by small rural banks because loan sales may allow them to lower their risk exposure. One author reported that a specialized brokerage enterprise in the home mortgage market could be established by a thrift with previous lending experience for as little as \$50,000 (Sinclair). If the startup costs of entry into the secondary market for farm mortgages are equally low and a local lender could generate sufficient volume because of a locational advantage, then specialized originator-brokers could evolve in agricultural lending. Full-service agricultural lenders may, however, enjoy similar cost savings. It remains uncertain, therefore, whether specialized or diversified lenders will gain a competitive advantage.

### **Investor Incentives**

The interest investors show in Farmer Mac securities depends on the factors that potentially affect the demand for a credit instrument. Provisions in the secondary market title that are of particular interest to investors include the composition of the pool, the nature of the guarantees provided, and the type of securities issued. C.G. Holtus, representing the ABA, testified that Farmer Mac securities, like other GSE securities, are likely to sell for 30-70 basis points above Treasury obligations of similar maturity (House Committee).

**Pool Composition.** The Agricultural Credit Act mandates that pooled mortgages vary in principal amount, that the land purchased be geographically dispersed

and vary in the types of commodities produced, and that the pool contain at least 50 loans. Other provisions outline restrictions on borrowers and the size of the loans. The apparent objectives of these provisions are to lower the pool's default risk through diversification and to prevent discrimination against the various classes of loans, commodity producers, and regions of the country. The details for implementing these requirements will be worked out in the underwriting standards.

From an investor's perspective, these requirements both lower the default risk through diversification and mask the underlying economics of the pool by blending different default risk loans (Johnson and Murphy). Farm business loans vary drastically in their cash-flow and risk characteristics. A dairy farm has, for example, a more regular cash-flow than a cash-grain farm. If the underlying economics of the pool are not easily evaluated or monitored, then the investor may seek a higher risk premium. The problem of monitoring pool economics is one of the primary attributes distinguishing pools of home mortgages (personal loans) from pools of farm mortgages (business loans). The characteristics of farm mortgage pools could vary enough that investors treat these securities more like corporate than Treasury bonds (or home mortgage pools).

From the poolers' perspective, it may be difficult to meet the legislative diversification requirements because of the short timespan within which to assemble loans. The various farm enterprise types and regions of the country are likely to purchase land at specific points in the year and the business cycle. The choice of loans for pooling at a given point in time may be fairly narrow and insufficient to meet rigid diversification standards. There is, accordingly, reason to suspect that farm mortgages will be more costly to pool than home mortgages have been.

The need to monitor the underlying economics of loan pools gives an advantage to pools structured like existing statistical measures of the agricultural sector's economic performance. Diversified pools structured precisely to match the structure of the agricultural sector will attract investors because diversification lowers the risk of the pool and the U.S. Department of Agriculture already publishes statistics to monitor sector developments. Other diversified pools likely would not be as attractive to investors unless special statistics were developed to aid investors in following the economics of the underlying mortgage pool.

**Types of Securities.** The 1987 Act does not specify the types of securities Farmer Mac will be permitted to issue. It is, however, believed that several types of securities can be issued under the secondary market title.

The chief concern is whether Farmer Mac will be allowed to issue CMO-like securities or whether it will be limited to issuing pass-through securities. Because the underlying loans entering Farmer Mac pools will have many differing characteristics, pass-through securities may not be very attractive. Prepayment risk may differ substantially between pools and may be very unpredictable because farm businesses differ in cash-flow characteristics. The legislation mandates diversified pools, in part, to limit this effect. However, investors are likely to be far more attracted to a CMO-like security with tranches that allow investors to express a prepayment risk preference.

A CMO-like security may prove attractive for private lenders. In the secondary market for home mortgages, the CMO is the instrument of choice for private lenders because of their ready acceptance by investors and the

restrictions placed on the issuance of GSE CMO's (Murry and Hadaway). Since Farmer Mac must work through a private pooler in issuing guarantees, the public sector will not be in competition with the private sector in issuing CMO's. Unlike pass-throughs, CMO's are a liability for the issuer and must be overcollateralized. Farmer Mac underwriting standards should permit poolers to form this type of organization.

Choosing security types is generally a marketing decision. Security denominations, the frequency of interest disbursements, and maturities can all be tailored to meet the needs of investor groups. The incentives to issue the various security types are likely to change over time.

Types of Loans. The types of loans that poolers can purchase will affect the underlying economics of pools because their default and prepayment risks vary. It is unclear whether Farmer Mac underwriting standards will permit both fixed-interest-rate and variable-interest-rate mortgages to be pooled. Since some lenders will find it advantageous to hold mortgages before selling them on the secondary market, variable-interest-rate loans are likely to remain a preferred instrument. Borrowers are also likely to prefer variable-interest-rate loans when interest rates are high. An important incentive for organizing Farmer Mac was, however, to encourage lenders to originate more fixed-interest-rate debt. In the interest of creating an active secondary market, Farmer Mac may want to encourage the formation of pools for both fixed- and variable-interest-rate loans, whether or not both are accepted into the same pool.

If Farmer Mac is to develop a program for marketing seasoned farm mortgages, then some type of arrangement similar to the Freddie Mac mortgage swap program will need to be developed. This need arises because a large number of loans are unlikely to meet Farmer Mac's underwriting and documentation standards. Freddie Mac's swap program solved this problem by purchasing these loans for its own portfolio. Freddie Mac, however, intended to absorb the risk associated with these poor quality loans which is not an objective set out for Farmer Mac. Since Farmer Mac is not permitted to purchase mortgages for its portfolio and is not designed to subsidize farm mortgage lenders, a swap program would have to be worked out in cooperation with the FmHA, FCS, or other institutions.

### Potential Efficiency Gains

Evidence from the home mortgage market suggests that a secondary market in farm mortgages may increase market efficiencies by encouraging functional specialization, a better regional flow of funds, and improved pricing. If the FCS is operating efficiently, however, the gains from a secondary market are likely to be modest relative to those made in the home mortgage market. Realization of benefits that occur will depend on the underwriting standards adopted, the size of market that evolves, and the market environment.

The secondary market for farm mortgages could bring efficiency gains by facilitating greater specialization among farm lenders and investors. Lenders, such as commercial banks, could increase their number of originations and specialize in originating mortgage loans, thus improving their skills in evaluating and counseling farm borrowers by selling rather than holding loans. Investors, such as life insurance companies and pension funds, could devote more time to portfolio management and improve their return by purchasing securities instead of originating loans. These effects would lower both intermediation costs and risk premiums as specialization grows in importance.

If these benefits exceed the additional cost of improving loan documentation, then farm credit markets may become more efficient.

Efficiency gains may result from an improved regional flow of funds. Regional differences in home mortgage interest rates are statistically significant, but the level of significance and coefficient of determination ( $r^2$ ) declined after the founding of Freddie Mac (Morrell and Saba). In the farm mortgage market, this effect will likely reflect more an increase in competition than in efficiency because regional differences in mortgage rates are more a result of FCS pricing policies than regional isolation. The Agricultural Credit Act of 1987 explicitly attempts to improve the regional flow of funds by requiring that pools be constructed of loans that are geographically dispersed. This requirement may have been unnecessary, however, because this is a natural function of secondary markets.

Inadequate price information raises risks and discourages competition. An active secondary market could mitigate these problems. Because mortgage securities may serve, in part, as a proxy for land ownership, land pricing may improve along with mortgage pricing with the formation of this market.

### **PUBLIC POLICY IMPLICATIONS**

This report has both described and analyzed the Farmer Mac proposal, the primary market for farm mortgages, the existing secondary market for home mortgages, and implications for the Farmer Mac secondary market. This section distills the lessons learned and relates them to current policy discussions.

#### **Farmer Mac Plays A Dual Role**

Farmer Mac is charged with both establishing and administering the secondary market for agricultural and rural housing mortgages. Combining these roles is unprecedented among the GSE's.<sup>24</sup> Fannie Mae, for example, did not insure FHA loans; it only marketed them. Ginnie Mae, by contrast, guaranteed timely payment of interest and principal, but began with a market established earlier by Fannie Mae.

The two roles, insuring and marketing loans, provide conflicting incentives. The economic viability of this market is a function of the number of loans from the primary market that meet Farmer Mac underwriting standards. An administrator concerned more with merchandising will accordingly be motivated to interpret the underwriting standards loosely, both initially to promote the market and cyclically when loan demand is down. An administrator with an eye on default liabilities, by contrast, will have an incentive to tighten the interpretation. Combining these two roles provides Farmer Mac with conflicting incentives, but may also provide some leeway for countercyclical intervention once a market is established (table 1).

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<sup>24</sup> The Treasury Department opposed this combination of roles and unsuccessfully proposed amendments that would have required Farmer Mac to compensate the Treasury (6 basis points) for its line of credit, to relinquish its default guarantee after 5 years, and to remove all Treasury privileges and privatize the corporation after 20 years (House Committee).

## The Secondary Market is Likely to be Viable

Although Farmer Mac must clear several institutional hurdles and certain market criteria must be met, it is likely that a viable secondary market will be created. Farmer Mac securities will be a secure investment, which should create demand for these securities even before active trading begins.

The rate at which the secondary market evolves depends on the number of mortgages available for pooling. If the underwriting standards restrict pooling to new, high-quality, fixed-interest-rate mortgages and the FCS opts not to pool its new originations, the pool of available mortgages may be small. Adverse decisions on underwriting standards and FCS participation will significantly affect market liquidity and profitability and will delay active trading.

Under favorable circumstances, \$1.5-\$2.5 billion of originations are expected to be pooled in 1989, which is sufficient to ensure active trading. Substantially more debt could be added if underwriting standards facilitate the restructuring and sale of seasoned debt.

## Borrower Effects Depend on Market Conditions

A secondary market for farm and rural housing mortgage loans will likely expand the availability of credit for those purposes. Several qualifications apply, however. First, the present agricultural credit market conditions are unusual. The FCS has lost money in the 1980's because its policy of average-cost pricing left it less competitive as interest rates declined in the early 1980's and because it retains a large number of high-yield, unhedged, long-term bond commitments that keep its interest costs high. FmHA outlays have also been reduced because of the fiscal crisis confronting the Federal Government. During previous business downturns, both the FCS and the FmHA increased their lending when private lending declined. Because they have not recently played this role, the potential to expand credit with a secondary market is fairly good. If the FCS recovers or FmHA lending increases, the secondary market's usefulness in expanding credit will decline.

Second, the availability of credit will expand, but only at competitive and increasingly volatile, commercial interest rates. This volatility is new in agricultural mortgage markets, in part, because the FCS no longer has a capital reserve large enough to buffer the farm borrower from changes in the cost of loanable funds. Because demand for long-term credit in the primary market is price sensitive, the number of new originations is likely to change as interest rates change. There will likely be periods when little credit is purchased because farm incomes will not support the expense. This situation is expected to persist, unless the negative real interest rates of the 1970's return to pervert the link between farm income and credit demand.

Third, although Farmer Mac may expand credit availability in periods of tight money, these benefits will not be evenly distributed. Private lenders may offer borrowers conforming to Farmer Mac underwriting standards larger than normal loans because the riskiness of these loans will decline. Moreover, loan sales will provide lenders with more capital to invest in nonconforming loans. Because nonconforming loans are presumed riskier and require lenders to commit larger capital reserves, they will cost more than conforming loans to originate. Because costs will now be more obvious, we can expect that pricing efficiency will increase and credit rationing will decrease in the primary market for farm mortgages. Consequently, borrowers with nonconforming

loans may be offered more credit with than without Farmer Mac, but they can expect to pay higher interest rates.

Fourth, it will take time for the benefits of the Farmer Mac secondary market to take effect. The Farmer Mac secondary market is unlikely to begin operation until 1989. If the supply of loanable funds increases in the meantime, the primary benefit of the secondary market--expanded liquidity--will be redundant. Delays in implementing the secondary market provisions of the 1987 Act therefore erode the justification for its creation.

The above discussion suggests that Farmer Mac will expand credit availability under tight credit market conditions, but that this benefit may be modest, short-lived, and unevenly shared. The cost of credit will, nevertheless, be less insulated from interest-rate changes in the national capital markets.

### **Availability of Fixed-Interest-Rate Loans May Not Increase**

Lenders may increase their offering of fixed-interest-rate mortgages with the advent of a secondary market for farm mortgages, but the risk premium associated with fixed-interest-rate loans will likely be passed on to borrowers in the form of higher interest rates.

The availability of fixed-interest-rate loans is essentially a question of who will pay the risk premium associated with interest-rate risk. With fixed-interest-rate loans, the lender pays. With ARM's and short-term loans, the borrower pays. Because there is no reason to expect investors to be more willing than lenders to absorb this risk, and because the Farmer Mac guarantee will not absorb this risk, the interest rate available for fixed-interest-rate mortgages will likely rise or remain the same.

The volatility of interest rates in the current market suggests that the risk premium associated with fixed-interest-rate loans is costly. Because Farmer Mac is not set up to subsidize borrowers, they will likely have to pay this cost if they want to receive fixed-interest-rate loans. Even if Farmer Mac substantially increased the level of competition in the farm mortgage market, the interest-rate advantage to borrowers would be small and short-lived.

### **The FCS Should be Able to Compete**

The success of the secondary market depends primarily on the FCS policy toward this market. Farmer Mac will be a FCS institution, and a third of Farmer Mac's board of directors will represent FCS institutions. The FCS controls a dominant share of the primary market and may establish an exclusive FCS pooler to market its loan sales on the secondary market. The FCS is furthermore given 3 years to improve its financial position before Farmer Mac has the freedom to guarantee an unlimited number of mortgage loans.

The FCS has four basic options in dealing with the secondary market. First, the FCS can take a laissez-faire attitude towards Farmer Mac, permitting FCS institutions to participate and compete on their own. Second, the FCS can treat Farmer Mac as another FCS institution, using Farmer Mac as a mechanism to pursue FCS objectives. Third, the FCS can fight Farmer Mac administratively and frustrate the economic viability of the secondary market by withholding FCS mortgages from secondary market sale. Fourth, the FCS can channel all loan sales through a designated pooler and use economies to scale in security underwriting to underprice private poolers and to dominate

secondary market sales. Conversations with FCS analysts suggest that the FCS will likely pursue a course somewhere between the first two options.

The range of administrative and market options available to the FCS suggests that the FCS and the secondary market will evolve together into a stronger cooperative lending institution and that the competition from private lenders will be manageable. This assessment assumes, however, that the FCS acts rationally and decisively to use the options it has been granted.

### Continuing Uncertainties

Continuing uncertainties face the establishment of the Farmer Mac secondary market for farm mortgages. Legislative and regulatory effects on Farmer Mac need clarification, and many significant parameters remain unknown.

### Need for Legislative or Regulatory Clarification

Several provisions of the Agricultural Credit Act of 1987 remain poorly defined. The two most important of these are the roles played by the subordinated participation interest (SPI) and a pool trustee (or fiscal transfer agent). The 1987 Act does not define the SPI and does not require the appointment of pool trustees.

The omission of more specific legislative guidelines may have two effects. First, the omission may make it costly for Farmer Mac to get originators and poolers to share promptly in default losses. Second, the uncertainties created by these ambiguities may discourage small or poorly capitalized firms from participating in this market. Legislative (or regulatory) guidance is needed to clarify the default liabilities associated with participation in the Farmer Mac secondary market.

### Unknown Parameters

Several key decisions that face Farmer Mac administrators depend on unavailable data. The decision to require 10-percent reserves, guarantee fees, and underwriting standards reflect assumptions about the distribution of debt-to-asset ratios among borrowers and the future default probabilities. These assumptions determine the cost of financing and market participation and the participant incentives. Improved information would permit Farmer Mac to operate more effectively.

There is a need to improve our understanding of the economics of the security market, particularly as it relates to cost efficiencies as the size of pools and the market increase. Few studies have analyzed the economics of security issues, which is surprising in view of the potential cost of inefficient market operation. The nature of competitive relationships in financial markets are also not well understood.

Regulators' reserve requirements vary among lenders and directly affect participation in the secondary market for farm mortgages, but have not been studied. In view of the growing importance of secondary markets, an analysis of reserve requirement effects on secondary market participation seems long overdue.

The differences between the Farmer Mac secondary market and the FmHA secondary market have likewise been outlined in this report, but not studied. A separate study of the FmHA market is warranted.

Advocates of the 1987 Act claimed that the Farmer Mac secondary market will increase the availability of fixed-interest-rate credit. Because this claim has not been substantiated, the home mortgage market needs to be studied to determine whether secondary market activity has had a measurable effect on fixed-interest-rate mortgage availability.

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